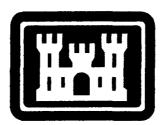
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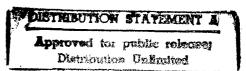
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Book 1 of 2

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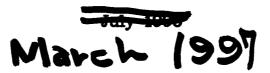




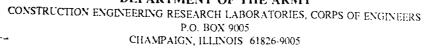
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1.0 EXECUTIVE SUMMARY

1.1 Introduction

This report is a Limited Energy Study (Building 2700) for the Public Works Department at Fort Monmouth, Eatontown, New Jersey participating in the Energy Engineering Analysis Program (EEAP). This program supported by the U. S. Army Engineer District, Norfolk, is used to assist military installations in identifying energy usage and cost saving projects at their facilities and possibly provide funding for projects. Entech Engineering, Inc. was selected to perform this study.

1.2 Objectives

The objective of this contract is to address Building 2700's (Myer Center) Central Steam Boiler Plant and the HVAC systems in the building. The work associated with the boiler plant also entails limited study of Building's 2704, 2705, 2706, and 2715. Refer to the detailed statement of work and subsequent correspondence in Appendix 8.13, Book 2 of 2.

1.3 Report Organization

The report consists of two books, Book 1 contains the results of the site surveys, analysis, and project development. The following sections are contained within Book 1.

- A. Section 2 Methodology, describes in detail software and techniques used in the analysis.
- B. Section 3 Facility Description, contains tables summarizing building characteristics and components.

- C. Section 4 Building Histories, quantifies existing and historical energy costs for fuel oil, natural gas, and electricity.
- D. Section 5 Energy Calculations, contains calculation results of energy cost by building, systems, and components.
- E. Section 6 Energy Conservation Opportunities, presents analysis of energy saving projects.
- F. Section 7 Summary of ECO results.

Book 2 contains the Statement of Work and report backup data.

1.4 Facilities Description

Building 2700 is a large structure that encompasses approximately 700,000 gross square feet of floor area on four (4) floor levels, a partial basement floor level and a partial mezzanine level on the first floor. Activities within the building include research and development for electronics.

Building 2700 is supported by two boiler plants. The original central steam plant located in the basement also supports the buildings listed previously. Building 2706 located next to Building 2700 houses a new hot water boiler plant that supports a portion of the heating loads in Building 2700. An inventory of the buildings involved is shown in Table 1.4.1.

Building Inventory Table 1.4.1

Building	Туре	Floor (sf)
2700	Research & Development	700,000
2704	Research & Development	7,100
2705	Night Vision Lab	47,592
2706	Utility	5,000
2715	Storage	3,000

1.5 Energy Usage

The average energy usage in Building 2700 for 1994/1995 is shown in Table 1.5.1. The fuel costs for No. 6 Fuel Oil for 1994/1995 were \$334,250. The estimated comparable natural gas costs for this period would have been \$478,000. The electric costs for Building 2700 are estimated to be \$1,444,000.

1994/1995 Average Energy Summary for Building 2700 Table 1.5.1

Energy	Energy Unit Total	mmBtu/ unit	Cost Total
No. 6 Fuel Oil (\$0.69/gal)	484,420	67,670	\$334,250
Natural Gas (\$7.50/mcf) (see note)	63,720	65,695	\$478,000
Electric Demand (\$8.67/kW avg.)	38,389	131	\$332,850
Electric Usage (\$0.0682/kWh avg.)	16,290,145	55,600	\$1,111,150

Note: Excluding the comparable costs for natural gas the total yearly energy costs for Building 2700 are estimated to be near \$1,780,000.

1.6 Summary of ECO Results

The summary of results for the ECOs evaluated in this report are shown in Table 1.6.1

ECO Sui

ECO#	ECO Description	Implementation C			
		Construction Cost	SIOH Cost	Desi; Cos	
1	Steam Decentralization, Base Case	\$1,199,000	\$67,000	\$73,	
1A	New Steam Boilers in Building 2700				
1B	New Hot Water Boilers for Cleanroom	\$1,229,000	\$69,000	\$74,0	
1C	Operate Cleanrooms with MCA Hot Water				
1D	Electric Domestic Hot Water Generator				
1E	Decentralize Domestic Hot Water	\$1,238,000	\$69,000	\$75,0	
2	Building 2700 MCA System ±5°F Temp. Setback Control	\$46,200	\$2,500	\$2,8	
3	Reduce Building Infiltration	\$86,000	\$4,700	\$5,3	
4	Replace Existing Central Chillers	\$258,900	\$14,000	\$16,0	
5	Convert Specific Air Cooled Chillers to Water Cooled	\$249,500	\$14,000	\$15,0	
6	Free Cooling	\$80,400	\$4,000	\$5,0	
7	2-Speed Fan Operation	\$26,600	\$1,500	\$1, 6	
8	Replace DHW Recirculation Pumps				
9	Automated MCA HW Temperature Reset	\$12,500	\$700	\$8	
10	Full Chilled Water Storage	\$800,000	\$44,000	\$48 ,0	
11	Partial Chilled Water Storage	\$490,000	\$27,000	\$29,0	
12	Variable Flow Primary-Secondary Chilled Water Dist.	\$158,700	\$8,700	\$9, 5	

ECO Summary for Fort Monmouth Table 1.6.1

		Implement	ation Costs			Annua	l Savings	
	Construction Cost	SIOH Cost	Design Cost	Total Cost	Gas mmBtu	Gas Cost	Electric mmBtu	Electric Cost
	\$1,199,000	\$67,000	\$73,000	\$1,339,000	36,685	\$267,000	(67)	(\$1,089
				\$0				
Į	\$1,229,000	\$69,000	\$74,000	\$1,372,000	37,525	\$273,000	(119)	(\$2,989
'ater				\$0				
r				\$0				
	\$1,238,000	\$69,000	\$75,000	\$1,382,000	39,235	\$285,510	(984)	(\$19,661
np. Setback	\$46,200	\$2,500	\$2,800	\$51,500	623	\$4,500	1,887	\$34,20
	\$86,000	\$4,700	\$5,300	\$96,000	1,329	\$9,700	(2)	\$
	\$258,900	\$14,000	\$16,000	\$288,900			1,018	\$25,06
Water Cooled	\$249,500	\$14,000	\$15,000	\$278,500			274	\$7,36
	\$80,400	\$4,000	\$5,000	\$89,400			183	\$4,40
	\$26,600	\$1,500	\$1,600	\$29,700			141	\$2,60
				\$0				
et	\$12,500	\$700	\$800	\$14,000	351	\$2,500		
	\$800,000	\$44,000	\$48,000	\$892,000			420	\$36,20
	\$490,000	\$27,000	\$29,000	\$546,000			111	\$14,90
ed Water Dist.	\$158,700	\$8,700	\$9,500	\$176,900			474	\$9,200



ort Monmouth

6.1

		LCCID	LCCID					
ost	Gas mmBtu	Gas Cost	Electric mmBtu	Electric Cost	\$/mmBtu	Recurring Maintenance	Payback	SIR
,000	36,685	\$267,000	(67)	(\$1,089)	\$16.25	\$190,000	2.9	5.32
\$0								
,000	37,525	\$273,000	(119)	(\$2,989)	\$25.12	\$190,000	3.0	5.25
\$0								
\$0								
.000	39,235	\$285,510	(984)	(\$19,661)	\$19.98	\$170,000	3.2	5.00
,500	623	\$4,500	1,887	\$34,200	\$18.12		1.3	10.7
.000	1,329	\$9,700	(2)	\$0	\$0.00		9.9	1.7
,900			1,018	\$25,066	\$24.62		11.5	1.2
.500			274	\$7,367	\$26.89		37.8	0.4
,400			183	\$4,408	\$24.09		20.3	0.7
.700			141	\$2,600	\$18.44		11.4	1.2
\$0								
.000	351	\$2,500					5.5	3.1
.000			420	\$36,200	\$86.19		24.6	0.6
.000			111	\$14,900	\$134.23		36.7	0.4
.900			474	\$9,200	\$19.41		19.2	0.7

1.7 Conclusion

The primary focus for this analysis was to determine the practicality of continued use of the central steam boiler plant in Building 2700. The findings reflect that with the new hot water boiler installation in Building 2706 supporting a large portion of Building 2700, the old centralized system is entirely too large and outdated to continue based on energy costs and maintenance and operation costs.

However, identifying cost effective Energy Conservation Opportunities associated with Building 2700's HVAC systems was limited. Two primary reasons were the part-time use of the central chiller system with the MCA 2-pipe heating and cooling system, and the large number of miscellaneous systems that support the remainder of this 700,000 square foot building.

In summary, only four (4) ECOs have been recommended for implementation out of the list identified in Table 1.6.1.

The ECOs were then categorized into one of the five types of projects. The five include:

- 1. Recommended ECIP
- 2. Recommended Non-ECIP O&M Projects
- 3. Recommended Non-ECIP LC/NC Projects
- 4. Recommended Non-ECIP General Projects
- 5. Non-feasible (listed as group in Section 7 only).

The criteria used to place the ECOs into these categories is detailed in Section 7. Of those, only one is considered to be eligible for ECIP designation.

That project ECO-1 (Base Case), decentralizes the central steam boiler plant by placing loads on the new hot water heating system, placing new boilers in areas/buildings that can not be supported by the hot water system, and provides new equipment for Building 2700's domestic hot water system, and where applicable in the cafeteria.

Recommend ECIP Projects Table 1.7.1

ECO #	Description	Total Cost	Annual Energy Savings	Annual Maint. Savings	LCCID Payback	LCCID SIR	Energy Savings (mmBtu)
1	Steam Decentralization	\$1,339,000	\$265,911	\$190,000	2.9	5.32	623 (Gas) 1,887 (Elec.)

2,510

The remaining three (3) recommended ECOs are Non-ECIP LC/NC (Low Cost/No Cost) projects. All three have potential for savings, and improved control for the system/building operations. The three are listed below:

Recommend Non-ECIP LC/NC Projects Table 1.7.2

	D14- 2700 MCA						(mmBtu)
	Bldg 2700 MCA System ±5° Temp. Setback Control	\$51,500	\$38,700	\$0	1.3	10.70	36,685 (Gas) (67) (Elec.)
	Automated MCA HW Temp. Reset	\$14,000	\$2,500	\$0	5.5	3.10	351 (Gas)
1	Reduce Building Infiltration	\$96,000	\$9,700 # 50,900	\$0	9.9	1.7	1,329 (Gas) (2) (Elec.)

Note: Refer to Section 2.6.6 for an explanation about the LCCID program.

38,296

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The following is a suggested implementation approach for the recommended ECOs.

A. ECIP Project:

Budget \$1.4 million for the steam centralization project (ECO-1). Budget additional funding as required to accommodate a specified amount of demolition of boiler plant equipment, piping, etc. Planning and scope development for the demolition work not required for project implementation has yet to be determined. The alternate selection of ECO-1 (Option B) would be made if hot water boilers are desired in lieu of steam for controlling Building 2700's cleanrooms.

B. Non-ECIP LC/NC Projects

Implement the Non-ECIP LC/NC Projects where possible. Details surrounding the implementation of ECO-3 (Infiltration Reduction) will require additional effort towards identifying a project scope and plan. That level of effort is beyond the limited energy study parameters. A detailed review of all the exhaust systems and their users would have to be completed before the implementation scope cost estimates and projected savings can be established for ECO-3. What we have presented here are the ECO figures to be considered prior to pursuing the project further as an energy saving opportunity.

On a final note, the decentralization of the central plant in Building 2700 not only will have significant savings, it should also improve the comfort and operations of the involved buildings and systems.

2.0 METHODOLOGY

2.1 General

The intention of this energy report is to assess the Myer Center's (Building 2700) current energy consumption and provide recommendations to improve energy efficiency. Entech has developed a thorough format which is adhered to during the development of an energy report. This format has permitted Entech to construct comprehensive reports in a smooth and timely process. Entech has employed the format in the preparation of over five-hundred (500) energy studies for commercial, industrial, and institutional clients.

The following is a listing of the components in Entech's methodology for completing energy studies:

- 1. Kickoff Meeting
- 2. Data Collection/Initial Review
- 3. Site Inspection
- 4. Model Existing Energy Characteristics
- 5. Energy Conservation Opportunities
- 6. Draft Report generation
- 7. Client Review
- 8. Final Report Generation

2.2 Kickoff Meeting

In order to initiate the process, Entech scheduled a kickoff meeting at Building 2700 on July 21, 1995. Entech was represented by Jeff Euclide and Matt Lloyd. Mr. James Kendall, Norfolk District Corp. of Engineers, and Mr. Kevin Dooney and Mr. William Van Sant, Ft. Monmouth represented the government.

The purpose of the meeting was to introduce both parties and explain the process Entech would follow during the study. In addition, the government's expectations were noted and incorporated into the project.

2.3 Data Collection/Initial Review

Prior to the first site inspection, Entech requested electric, oil and gas billing data for Building 2700. Entech reviewed data available to aid in determining the applicable incremental rate and where possible operating profiles for the building systems. In addition, Entech visited the site, reviewed existing drawing files, and copied certain building construction drawings for use in compiling data for this report.

2.4 Site Inspection

Entech performed site inspections of Building 2700 during the months of August through November 1995. During these visits, Entech observed and investigated the central utilities, and Building 2700 space usage and associated HVAC systems. In addition to the information gathered for Building 2700, Entech visited other buildings connected to the central boiler plant located in Building 2700.

Central Utilities: Entech visited the central boiler plant (Building 2700) and the central chilled water/heating water plant (Building 2706), recorded equipment information, and interviewed plant personnel relative to plant operations. Boiler logs were obtained to help establish a two year steam production history for the plant. Chiller logs were not available.

Building 2700 Space Usage: Each area was evaluated to determine the type of operating use such as office space, storage, electronics labs, miscellaneous labs, cleanrooms, etc. Sound and reasonable assumptions were made from these evaluations about the lighting consumption, non-HVAC (miscellaneous) equipment consumption, and ventilation and/or infiltration rates where applicable or evident from design drawings.

Areas were categorized into general types and recorded by floor to determine the total square footage of each type on each floor. This information will then be used to generate heating and cooling load models for Building 2700.

HVAC Systems: During the building survey of each floor, Entech investigated the associated heating, air conditioning and ventilation systems. Some areas were not accessible due to security clearance regulations. For the most part though, equipment sizes, horsepowers, etc., and corresponding heating and cooling load data were developed by evaluating both the air moving devices and the external support equipment; by reviewing building drawings and equipment lists; and by external inspection of areas through windows, doorways, etc. where not accessible.

Miscellaneous Buildings: Buildings 2704, 2705 and 2715 were visited to determine the connected steam requirements for each. Design drawings were acquired to aid in determining the individual building's portion of the central plant steam load.

2-3

Entech interviewed building personnel to obtain an accurate overview of building function and operation. A preliminary list of potential Energy Conservation Opportunities (ECOs) was developed during early site inspections. Upon completion of final inspections and after acquiring a better understanding of Building 2700 systems a list of ECO's was generated for evaluation.

2.5 Model Existing Energy Consumption

2.5.1 General

Once the site investigation phase is complete, Entech models the existing operation of energy users within the building. Entech uses in-house computer programs, purchased computer programs, and literature to assist in calculating current energy costs for HVAC equipment, miscellaneous equipment and lighting systems. The main computer models used to estimate energy use are as follows:

- 1. Steam Use Model
- 2. Heat Gain Model (Degree Day Method)
- 3. Heat Gain/Loss Model (EZDOE Method)
- 4. Electric Model

The standard abbreviations used in this report include the following:

Standard Abbreviations

Key	Description	Key	Description
Ave	Average	lbm	Pound Mass
Btu	British Thermal Unit	lbs	Pounds
Btuh	British Thermal Unit per Hour	lb/hr	Pounds per Hours
cfm	cubic feet per minute	mlbs	Thousand Pounds
°F	Degrees Fahrenheit	mcf	Thousand Cubic Feet
ft	Feet	min	Minute
gal	Gallon	mmBtu	Million British Thermal Unit (MBH)
hr	Hour	mo	Month
in	Inches	psig	Pounds per Square Inch Gauge
kW	Kilowatt	sf	Square Foot
kWh	Kilowatt Hour	yr	Year

2.5.2 Steam Use Model

Entech developed a model that examines how all of the steam produced at the boiler plant in Building 2700 is used. The steam produced is used for building heating, reheat, domestic hot water, and cafeteria use. The boiler plant uses a portion of the steam to preheat boiler feedwater. The remainder or residual of the energy consumed to produce steam is lost in the distribution system through leaks, the overheating of spaces, and as heat loss from the piping. Each of the steam uses will be examined in the energy model section of this report. Please refer to the energy models in Section 5 for more detail about the following steam uses.

Steam Uses

- 1. Space Heating
- 2. Reheat
- 3. Domestic Hot Water
- 4. Cafeteria Steam Use
- 5. Boiler Plant Steam Use
- 6. System/Distribution Losses

2.5.3 Heat Loss Model (Degree Day Method)

A building heat loss model, based upon the ASHRAE Degree Day Method, was developed for Building 2700. This computer model is one of the tools utilized by Entech to determine the heating usage and costs of a particular building. The model estimates the design heat loss in Btu/hr and also approximates energy usage and costs associated with space heating. In a building with high internal loads, like Building 2700, the estimated Heat Loss Model usage and cost figures will generally be higher (10-50%) than what is actually experienced. Whereas the design day demand predicted by this model is close (±10-20%) to the actual experienced.

A sample heat loss model is shown in Table 2.5.3.1 at the end of this sub section. The sample model is not particular to any building or area, rather it is only to be used as an example for methodology explanation. The building is divided into various heating zones that possess distinct characteristics. Wherever possible, the space or zone reflects the actual zoning of the heating system. The various areas are combined to give a total building model of space heating.

The model is divided into three sections as follows:

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Exterior Data: The heat loss attributed to transmission losses through walls, windows, doors, and roofs. A U-value is calculated for each building element and is shown at the bottom of the page.

<u>Ventilation/Infiltration:</u> For the heat loss attributed to the ventilation system, wherever possible, building design data was used to calculate the amount of outside air (cfm) being brought in for ventilation. Infiltration was based on air change estimates based on the following building construction:

Tight	0.3	Air change/hr
Average	0.6	Air change/hr
Leaky	1.0	Air change/hr

In some cases where ventilation and infiltration are both contributing to a building or space load, the infiltration value will be adjusted to represent a reasonable amount of air passing through the building. The value used is shown at the bottom of Table 2.5.3.1.

Below Grade: The heat loss through the floor and any underground walls. The average ground temperature is assumed to be 50°F.

Each zone has three lines of information. The first line is the input data used such as wall areas, window area, etc. The second line is the calculated design heat loss (in Btu/hr) based upon the input data. This number represents the amount of heat loss during the design condition of 10°F outside temperature.

For example, in Table 2.5.3.1, the window area in zone 1 is 360 sf. The associated heat loss through the window is therefore, 12,276 Btu/hr and is calculated as follows.

Heat Loss = 360 sf × 0.55
$$\frac{Btu}{sf \cdot {}^{\circ}F \cdot hr}$$
 × $(72 \cdot F - 10 \cdot F)$

The third line is the estimated energy cost for the year based on the heating degree day formula. This procedure is based on Chapter 28 of the 1993 ASHRAE Fundamentals Handbook. In our example, using the zone 1 windows, the annual energy cost associated with transmission losses through the windows is \$97 per year using No. 2 fuel oil.

$$Cost = \frac{\left(HeatLoss \times hdd \times 24 \frac{hr}{day}\right)}{\left((outtemp-intemp) \times 1,000,000 \frac{Btu}{mmBtu}\right)} \times \frac{\$}{mmBtu} \times C_D$$

$$Cost = \frac{\left(12,276 \frac{Btu}{hr} \times 5,034hdd \times 24 \frac{hr}{day}\right)}{\left((72°F-10°F) \times 1,000,000 \frac{Btu}{mmBtu}\right)} \times \frac{\$6.55}{mmBtu} \times 0.62$$

C_D is an empirical correction factor for heating effect versus 72°F degree days found in the ASHRAE Fundamental Handbook.

11-Jul-96

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Sample Heat Loss Model (Degree Days)
Table 2.5.3.1
Ft. Monmouth, Myer Center - Bldg. 2700

			ш	ă	EXTERIOR DATA	ATA			VENTII	LATION, IN	FILTRATIO	VENTILATION, INFILTRATION INTERIOR DATA	R DATA		BELOW GRADE	1	TOTAL
		MALL	-	WINDOW	DOOR	WALL		ROOF	CEILING	FLOOR	SPACE	INF AIR	VENT	WALL	WALL	FLOOR	HEAT
SPACE NAME		HEIGHT FT	LENGTH	AREA SQ FT	AREA SQ FT	AREA SQ FT	WALL U FAC	AREA SO FT	HEIGHT FT	AREA SO FT	VOLUME CU FT	CHANGE	AIR CFM	H	LENGTH	AREA SO FT	LOSS BTU/HR
Building	BTU/HR COST-\$	0.01	300	360 12,276 \$97	3,100 \$25	2,590 14,452 \$114	0.09	15,000 102,300 \$809	8.0	69,430	555,440	5,554 371,923 \$2,941	3,000 200,880 \$1,589	0	0\$ 0	0\$ 0	704,931
	BTU/HR COST-\$	0.0	0	200	200	000	0.00	00\$	0.0	0	0	0 0 0 0 0 0	0 0 \$0	0	00\$	00\$	0\$
	BTU/HR COST-\$	0.0	0	000	000	2000	0.00	0	0.0	0	0	000\$	0	0	\$00	0	0\$
	BTU/HR COST-\$	0.0	0	200	000\$	00\$	0.00	0\$	0.0	0	0	000\$	0	0	0 0\$	0.8	0\$
	BTU/HR COST-\$	0.0	0	0 0 0 0 0 0	200	000	0.00	00\$	0.0	0	0	00\$	0	0	000\$	0	\$0
	BTU/HR COST-\$	0.0	0	0005	0 0 0 5	0 0 0 0 0 0	0.00	0.5	0.0	0	0	00\$	00\$	0	0 0\$	0\$	0\$
	BTU/HR COST-\$	0.0	0	200	200	00\$	0.00	00\$	0.0	0	0	00\$	0 0 80	0	\$00	0 80	0\$
	BTU/HR COST-\$	0.0	0	000	0005	200	0.00	0\$	0.0	0	0	00\$	0	0	00\$	0	0\$
	BTU/HR COST-\$	0.0	0	200	00\$	00\$	0.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0	0	0	00\$	0	0	0 0\$	0\$	0\$
TOTALS	BTU/HR COST-\$		300	360 12,276 \$97	3,100 \$25	2,590 14,452 \$114		15,000 102,300 \$809		69,430	555,400	5,554 371,923 \$2,941	3,000 200,880 \$1,589		0 0 80	00\$	704,931
OUTSIDE TEMPERATURE(°F) INSIDE TEMPERATURE (°F) DELT TEMPERATURE (°F) HEATING DEGREE DAYS/YR. FUEL COST, SÚUNT SYSTEM EFFICIENCY (XX) SYNMBTU (WITH EFF.)	10 72 62 5,034 \$0.69 0.1387 76.0% \$6.55		DOOR U FA WINDOW U ROOF U FA GRND FLO GRND WAI ANNUAL C C(D)	DOOR U FACTOR (BTU/SQFT*F*H) WINDOW U FACTOR (BTU/SQFT*F*H) ROOF U FACTOR (BTU/SQFT*F*H) GRND FLOOR FACTOR (BTU/SQFT*H) GRND WALL FACTOR (BTU/SQFT*H) ANNUAL COST FACTOR (\$YRBTU/HR)	USQFT*F*H) JISQFT*F*H) JISQFT*F*H) R (BTU/SQFT*H) RR (\$\frac{1}{2}\text{ST}	F*H) () T*H) U/HR)	0.55 0.11 0.4 0.007909		WIND VEL INFILTRAT INFILTRAT WINTER G GROUND T GROUND W BELOW GR	WIND VELOCITY (MPH) INFILTRATION AIR CHANGES/HR INFILTRATION AIR CHANGE FACTOR WINTER GRND WATER TEMP (*F) GROUND TEMP DELLA TEMP (*F) GROUND WALL FACTOR BELOW GRADE DEL TEMP (AD USTED)	H) HANGES/H! HANGE FA 'R TEMP (°F 'O'R TEMP (AD ITEMP (AD ITEMP) (AD ITEMP (R CTOR () () USTED)	15 0.6 0.010000 50 22 22 0.3 6.6		HEAT LOSS, MMBTU/YR HEAT LOSS,BTU/DEG DAY UNITS FUEL/DEG DAY UNITS FUEL/YR COST, \$/SF/YR COST, \$/CF/YR	MMBTU/YR STU/DEG DA DEG DAY YR R	1,121 222,610 1.61 8,080 \$0.08 \$0.00

2.5.4 Heat Loss/Gain Model (EZDOE Method)

General: Entech utilizes an hourly energy use simulation program known as EZDOE. This program is a PC version of the Department of Energy's simulation program known as DOE-2.1D. The program has the capability of calculating hour-by-hour energy use of all aspects of a building. This program will be used to substantiate estimates of connected capacities of HVAC equipment determined during the site investigation. The results will also be used to guide the diversity of the electrical model. Year round cooling and heating loads will be estimated based on the building's usage. Where appropriate, EZDOE will be used to analyze ECOs for determining savings. This section will provide a short overview of the program and its capabilities.

<u>Energy Calculations</u>: EZDOE calculates the annual energy consumption of HVAC systems based on U.S. Department of Energy standards. The program contains four (4) main simulation sections utilized are as follows:

1	Loads
2	Systems
3	Plants
4	Economics

<u>Loads</u>: This portion of the program allows the user to construct a database on the building or zone. In the case of Building 2700, the loads will be broken up by zones on each of the floors served by specific system and plant types. Some of the areas of input are listed on the following page:

1	Exterior and Interior Wall Constructions
2	Roof Constructions
3	Window Details, Exterior Door Details
4	Schedules, Daily, Weekly, and Monthly
5	Lighting Load
6	People Occupancy Rates
7	Space/Area Definition
8	Miscellaneous Loads Such as DHW Usage
9	General Equipment Load
10	City/Weather References

Systems: This section simulates air distribution systems which can be utilized within a building. Twenty-two different air systems are supported. In general, spaces defined under loads can be attached to systems. The following table lists some features which can be assessed:

1	Variable Air Volume
2	Preheating
3	Night Setback
4	Economizer
5	Reheating, Humidification
6	Baseboard Heating
7	System Scheduling

<u>Plants</u>: This section simulates the building's physical plants (boilers, chillers, water heaters, etc.) and various options. The program has the

capability of sizing equipment based on loads or sizes that can be manually entered into the program. A wide variety of equipment can be simulated. The following table lists additional features which can be utilized.

1	Thermal Storage
2	Peak Shaving
3	Demand Limiting
4	Load Management

Economics: This portion provides a means to simulate utility tariffs and costs. Fuel consumption during specific time periods can also be generated. The following is a list of features which can be utilized:

1	Demand Costs
2	On-Off Peak Usage Costs
3	Demand Ratchets
4	Seasonal Rates

Note: The economics section of the EZDOE modeling will not be used with this report in lieu of the Steam Model and the Electric Model.

2.5.5 Electric Model

Entech's electric model is a computer spreadsheet used to identify electric loads within the building and to identify the individual contribution to electrical demand, usage, and cost.

Loads have been identified from site investigations and drawings. Building space lighting loads will be identified in the EZDOE Model. It is important to realize that the electric model is an approximation of the electricity used by each load. It shows general relationships and gives a reasonable allocation of electrical demand, usage, and cost.

Demand (kW) contributions and estimated kWh usages are then included in subsequent calculations of the Energy Conservation Opportunities of Section 6.0.

A sample electric model is shown in Table 2.5.5.1. A description of each column heading follows:

<u>Connected Load</u>: The total connected electric load is expressed in kW.

<u>Winter Demand:</u> The average kW contributing to the billing demand each month. Winter months include December, January, February, and March.

<u>Intermediate Demand:</u> The average contribution to billing demand in the intermediate months of April, May, October, and November.

<u>Summer Demand:</u> The average contribution to billing demand in the summer months of June, July, August, and September.

Winter Usage: The estimated full load equivalent off-peak and on-peak hours that the load operates in a day within the following schedules during the months of December through March. The following table lists the utility billing periods.

Billing Period	Time of Day	days/mo
Off-Peak	8:00 p.m. to 8:00 am 24hrs Saturday/Sunday	30
On-Peak	8:00 a.m.to 8:00 p.m.	20

The kWh/mo in the next column is then calculated by multiplying (Connect Load) x (Hrs/Day) x (# of days).

<u>Intermediate Usage:</u> Same as winter usage except months are April, May, October, and November.

<u>Summer Usage:</u> Same as winter usage except months are June through September.

Non-Summer and Summer Totals Per Year: The kW/month for each season is multiplied by the appropriate number of mo/season to calculate annual kW for non-summer and summer. The kWh/year is calculated in the same manner as kW. The non-summer and summer costs are calculated by multiplying kW and kWh by the applicable incremental costs.

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							Winter Bill	ing Mon	ths		nterme
		i otal	Winter	Inter	Summer	Off-Peak			n-Peak	O	ff-Peak
No.	Description		Demand kW/Month		Demand kW/Month	hrs/ day	kWh/Mo	hrs/ day	kWh/Mo	hrs/ day	kWh/
1											
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	Historical Billing D	emand Averages	
Dec	0 Apr	O Jun	0
Jan	0 May	Oi Jul	0
Feb	0 Oct	0∦ Aug	0
Mar	0 Nov	Sep	0
Avg	0	0	0

2-16

	Historical Billing On-P
Dec	0 Apr
Jan	0 May
Feb	0 Oct
Mar	0 Nov
Avg	0

Winter Months: October, November, December, January, February, March, April, May Summer Months: June, July, August, September

•	Winter	Summer
Incremental Demand Cost, \$/kW	\$6.60	\$17.09
Off-Peak Incremental Usage Cost, \$/kWh	\$0.037	\$0.034
Intermediate Incremental Usage Cost, \$/kWh	\$0.046	\$0.047
On-Peak Incremental Usage Cost, \$/kWh	\$0.053	\$0.062

C:\X123W\4130.05\ELECMOD\SMPEMOD.WK4

	Incremental Costs:	Winter	umme
Incremental D	mand Cost (\$/kW):	\$8.310000	•••••
On-Peak Incremental	Jsage Cost (\$/kWh):	\$0.070180	
Off-Peak Incremental	Jsage Cost (\$/kWh):	\$0.060280	•••••

Sample Electric Model **Table 2.5.5.1**

		Winter Bil	ling Mon	ths		ntermediate l	Billing M	onths		Summer Bi	ling Mon	ths			
Summer	Off-Peak On-Peak				f-Peak		n-Peak	O	ff-Peak		n-Peak		Non-St		
Demand	brs/		brs/		hrs/		hrs/		hrs/		hrs/		Demand	Off-Peak	On
kW/Month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KW
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1.9	10.0	660	6.0	264	10.0	660	6.0	264	10.0	660	6.0	264	15	5,280	
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Aug 0		İ	Feb	0	Oct	oļi	Aug	o		1	Feb	o ',	Oct	0	g A
Sep 0		İ	Mar		Nov		Sep	0			Mar	<u> </u>	Nov		
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April, May

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2.5.5.1

ths						-										
'eak		ff-Peak		n-Peak	Non-Summer						Summer					
11/1 0.5	brs/		brs/		Demand	-		On-Peak		Cost	Demand	Off-Peak	On-Peak	Cost	j	
Wh/Mo	day	kWh/Mo	dav	kWh/Mo	kW/Yr.		KWH/Yr.	KWH/Yr		S	kW/Yr.	KWH/Yr.	KWH/Yr.	S	No.	
	 								 -						 	
264	1	660	6.0	264		15	5,280	2,1	12	\$406	7	2,640	1,056	\$283		
	1 .0.0					7	5,200	2,1	12	3700		2,040	1,036	3283	} <u>:</u>	
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2.5.6 mmBtu/Unit

The following energy values have been used in the energy calculations in this report.

Table 2.5.6.1 mmBtu/Unit

Fuel Type	Btu/Unit	mmBtu/Unit	Comment
Natural Gas (mcf)	1,031,000	1.031	10.54 Therms
#2 Heating Oil (gal)	138,700	0.1387	
85 psig Steam (lbs)	1,000	0.001	Heating Energy
Electricity (kWh)	3,413	0.003413	

2.6 Energy Conservation Opportunities (ECOs)

After the energy models have been finalized, Entech proceeds to analyze the ECOs which were developed during the site inspection. An ECO describes an idea for decreasing energy usage or costs, and the format consists of the following sections:

1	Existing Condition Description
2	Proposed Condition Description
3	Capital Cost Estimates
4	Annual Energy Savings
5	Recurring Annual Savings
6	Discussion

2.6.1 Existing Condition

A general description of the existing condition will be provided as well as current annual energy usage and cost.

2.6.2 Proposed Condition Description

The project, which is to be implemented, will be described in adequate detail. The expected energy usage and cost for the proposed project will be formulated and shown.

2.6.3 Capital Cost Estimates

The capital cost estimates prepared for this study are considered to be "conceptual" in nature. They are conceptual because they are based upon engineering design that is less than one percent of a complete detailed design effort for such a project.

The cost estimates are broken down into material, labor, and engineering components. Calculations or a spreadsheet are usually provided with each ECO.

The final results of a project can vary significantly from the "Conceptual" cost estimate. The American Association of Cost Engineers (AACE) generally states that an accuracy range of plus or minus 20% from the total estimated cost is possible. Variations beyond this range are possible for the stated scope, but not likely.

Since it is not possible for the consultants to know the most likely variations that can occur in the future, nor can they control certain technologies, contractors, or general economic conditions. The costs estimated herein should not be construed as fixed or precise. Rather, they

are estimates which will require a great deal of effort to manage until the final costs are realized.

2.6.4 Cost Savings

This division of the ECO compares the existing and proposed energy costs and notes increases or decreases in energy consumption.

2.6.5 Discussion

Entech notes the expected simple payback period for the ECO. Any additional benefits or concerns are noted in this section.

2.6.6 Life Cycle Cost Analysis Summary

The life cycle costs were forecasted with the Blast: LCCID version FY 1995, Level 92 Program. LCCID, which is short for Life Cycle Cost In Design, is an economic analysis computer program tailored to the needs of the Department of Defense (DoD). It is intended to be used as a tool in evaluation and ranking design alternatives for new and existing buildings. LCCID has built-in calculation procedures recognized as a standard for the DoD. The following is the specific criteria and other guidance embodied in LCCID according to the LCCID users manual.

The specific criteria and other guidance embodied in LCCID are:

1. Office of Management and Budget (OMBP Circular A-94, March 27, 1972. OMB Circular A-94 has a new version (October 29, 1992) but a final decision on incorporating the new circular into tri-service criteria has not been determined.

- 2. Code of Federal Regulations, 10 CFR 436A, January 25, 1990. Annual fuel escalation rates are published by NIST (National Institute of Standards and Technology) under sanction by DoE.
- 3. Memorandum of Agreement on Criteria/Standards for Economic Analysis/Life Cycle Costing for MILCON Design, 18 March 1991. This memorandum obviated the need for separate criteria in the three services (Army, Air Force, and Navy) of the Department of Defense.
- 4. DoD Energy Conservation Investment Program (ECIP) Guidance. This guidance uses the memorandum from Item 3, as its basis, but also has some qualifying factors for energy conservation projects and specifies its own format.

The LCCID Program is structured as shown on Table 2.6.6.1, ECIP Study LCCID Ready Reference, which can be found at the end of this section. This table was obtained from the LCCID program users manual.

The following criteria was selected/entered into the LCCID program to obtain the Life Cycle Cost Analysis Summaries prepared as part of each ECO:

- 1. Common criteria selected for all life cycle cost analysis summaries:
 - Military Construction Army
 - User Entry of Consumption Values
 - ECIP Project
 - Energy Escalation Rates for FY94 (only option available)
 - English Units

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- 2. Common criteria entered into all life cycle cost analysis summaries:
 - ECIP Economic Life: Twenty years
 - Location: New Jersey
 - Electric Usage Cost: \$21.23 per mmBtu

$$\left(\begin{array}{c} \frac{\$0.07246 \ / \ kWh}{.003413 \ / \ \frac{mmBtu}{kWh}} \right)$$

- Project Number: #4130.05
- Fiscal Year: 1995
- Project Title: EEAP
- Installation Name: Ft. Monmouth
- Study Preparer: JED
- Salvage Value: \$0
- 3. Criteria entered into life cycle cost analysis summaries from the ECO:
 - Discrete Portion Title: ECO #
 - Construction Cost: Dollars
 - Design Cost: Dollars (Program default of 6% of construction cost rounded off.)
 - Supervision, Inspection, and Overhead (SIOH): Dollars
 (Program default of 5.5% of construction cost rounded off.)
 - Energy Savings: mmBtu (Electrical, oil, gas, etc.)
 - Demand Savings: Annual Dollars (Electrical only)
 - Annual Recurring Savings: Maintenance Savings

A sample Life Cycle Cost Analysis Summary Report is shown in Table 2.6.6.2 located at the end of this section. In this example, all the common criteria noted in 2, Items A and B, was selected or entered into this summary report.

In Part 1 of the summary report, a Construction Cost of \$100,000 and a Design Cost of \$6,000 was assumed (rounded in some cases). The SIOH was rounded off to \$6,000 by the user versus \$5,500 or 5.5%.

In Part 2 of the summary report, an electric energy saving of 5,000 mmBtu/yr at a cost rate of \$10/mmBtu was assumed.

In Part 3 of the summary report, a maintenance savings of \$0/yr was assigned. In the actual summary report, the above-assumed numbers would originate from an ECO. In the example, the program calculated a simple payback of 2.24 years and a savings to investment ratio of 6.69.

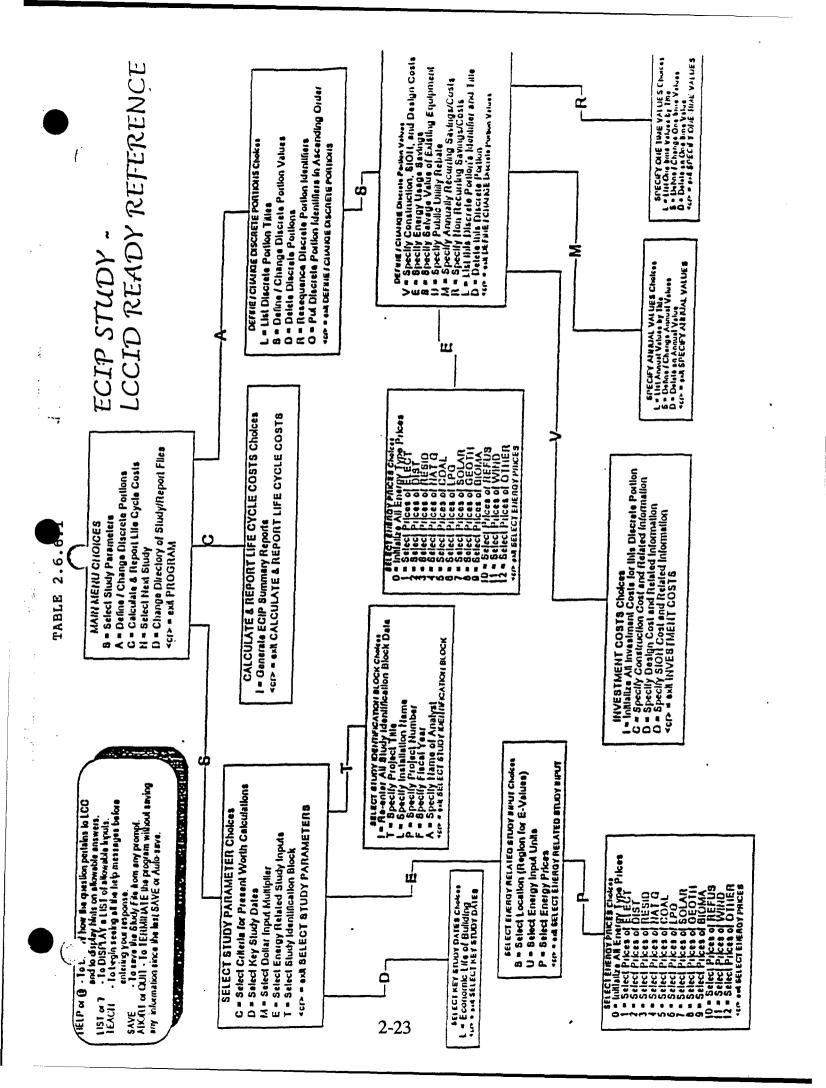


Table 2.6.6.2

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LIFE CYCLE COST ANALYSIS SUMMARY
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LCCID FY95 (92)
INSTALLATION & LOCATION: FT. MONMOUTH-NREGION NOS. 2 CENSUS: 1
PROJECT NO. & TITLE: 4130.06 FT. MONMOUTH
FISCAL YEAR 96 DISCRETE PORTION NAME: EXAMPLE
ANALYSIS DATE: 02-23-96 ECONOMIC LIFE 20 YEARS PREPARED BY: SCOTT BARNDT
1. INVESTMENT
A. CONSTRUCTION COST $ 100000.
B. SIOH $ 6000.
C. DESIGN COST $ 6000.
D. TOTAL COST (1A+1B+1C) $ 112000.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE $
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                            112000.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1994
    UNIT COST SAVINGS ANNUAL $ DISCOUNT DISCOUNTED $/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
   3. NON ENERGY SAVINGS(+) / COST(-)
                                                       $ 0.
14.88
$ 0.
   A. ANNUAL RECURRING (+/-)
       (1) DISCOUNT FACTOR (TABLE A)
       (1) DISCOUNT FACTOR (TABLE A)
(2) DISCOUNTED SAVING/COST (3A X 3A1)
   B. NON RECURRING SAVINGS (+) / COSTS (-)
                             SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)/
(1) (2) (3) COST(-)(4)
                ITEM
                              $ 0.
   d. TOTAL
                                                                     0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 0.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 50000.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                                    2.24 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                                $ 749500.
7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =
                                                                     6.69
    (IF < 1 PROJECT DOES NOT QUALIFY)
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13.27 %

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR):

2.7 Draft Report/Client Review/Final Report

After the previous sections have been substantially completed, Entech proceeds to compile the information into the report format. Entech schedules a meeting with the client to present its findings. A copy of the report is supplied to the client for a more detailed review. The client's review process typically lasts 2-3 weeks.

Entech will then proceed to incorporate the clients review comments and produce a final report.

3.0 FACILITY DESCRIPTION

3.1 General

The Myer Center, Building 2700, is located on the grounds of Fort Monmouth, Eatontown, New Jersey. Building construction was completed in 1955 and encompasses approximately 700,000 gross square foot of floor area on four (4) floor levels, plus a partial basement floor level. Building 2700 was renovated in 1982 under the Major Construction Activities Program (MCA). Renovation costs were in the range of \$26,000,000 which encompassed a new building facade, including the addition of building insulation, and a reduction of the exterior glass area. Numerous building HVAC system modifications were incorporated under this renovation program. Building 2700 is utilized for numerous activities and maintains the areas as shown in the table below:

Table 3.1.1., Building Use

1	Electronics Labs
2	Cleanroom Facilities
3	Computer Rooms
4	Conference Rooms
5	Meeting Rooms
6	Offices
7	Cafeteria
8	Library
9	Auditorium
10	Recreation Facilities

The following information is supplied for some of the main areas of activity in the building.

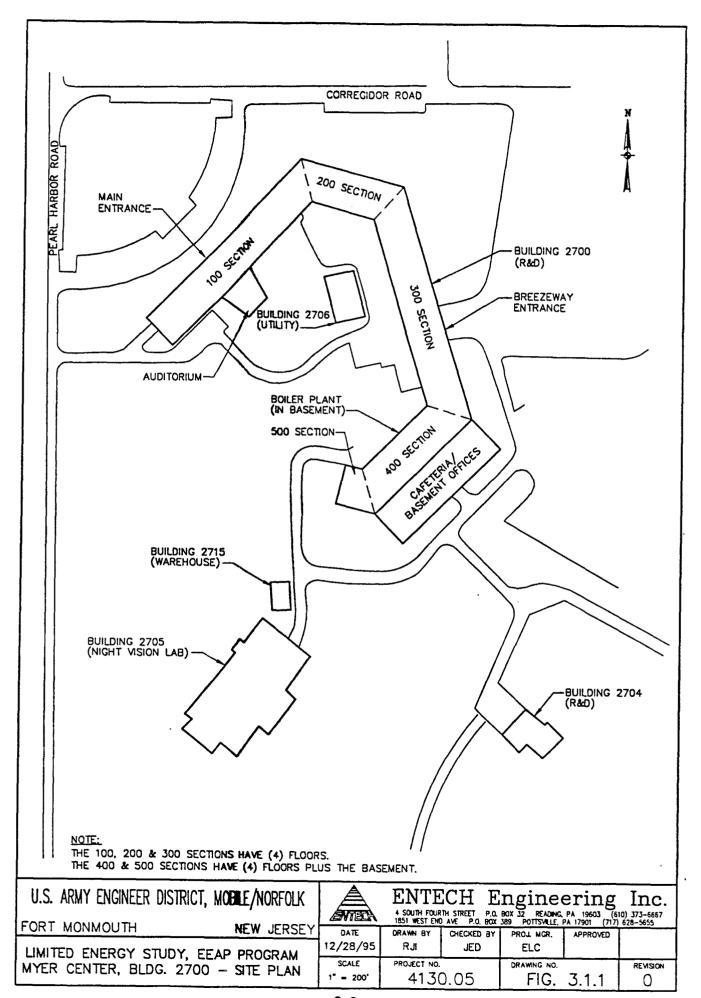
<u>Library</u>: The library is located on the west side of the 400 block on the first floor level. It is typically open five days a week 0900 to 1700 hours.

Cafeteria: The cafeteria is open for breakfast and lunch five days a week from 0630 to 1330 hours. According to the cafeteria management, approximately 600 meals are prepared daily. The cafeteria is located on the east side of the 400 block on the basement level.

<u>Auditorium:</u> The auditorium is located on the west side of the 100 block on the first floor. The seating capacity is 500 persons and is generally used on a daily basis.

Refer to Figure 3.1.1 on the next page for an overall view of Building 2700 on the Fort Monmouth site. Note the other Buildings 2704, 2705, 2706 and 2715 which are presently connected to the central boiler plant in Building 2700.

3-2



3.2 Building Occupancy

Building 2700 is normally staffed five (5) days a week during the hours of 0700 and 1900, though the facility is available to staff members seven (7) days a week, 24 hours per day. The normal building staff is currently comprised of 1,400 persons, future growth is anticipated to be in the range of 1,800 persons. Approximately 100 staff, security, and maintenance personnel are in the building during the hours of 1900 to 0700. During the weekends approximately 100 personnel are expected in the building on average.

3.3 Building Structure

Exterior Walls: The original building exterior wall construction is generally two (2) layers of concrete masonry units (CMU) without any form of insulation. During the 1982 MCA project, an insulated panel facade was added to the existing building exterior walls. Present wall thickness ranges between 14 and 20 inches with an average overall thermal wall resistance of 12.21 as shown on the table below:

Table 3.3.1, Wall Resistance

Material/Thickness	Resistance Value
Outdoor Air Film	0.17
2" Thick Insulated Building Panel	8.00
2" to 8" air space	0.97
4" CMU	0.71
2" Airspace	0.97
4" CMU	0.71
Indoor Air Film	0.68
Total Resistance (R)	12.21
Thermal Transmission (U)	0.08

Roof: In general, the roof construction consists of membrane roofing material over rigid insulation board, placed on top of the existing building roof system. The total roof resistance is calculated to be 9.54 as shown on the following table:

Table 3.3.2, Roof Resistance

Material/Thickness	Resistance Value
Outdoor Air Film	0.17
2" Rigid Insulation	8.00
Building Roof Decking	0.76
Indoor Air Film	0.61
Total Resistance	9.54
Thermal Transmission	0.11

Glass: Window area utilizes tinted insulating glass. The thermal transmission U value is 0.55 and the shading coefficient is 0.51.

3.4 Mechanical Systems (Building 2700)

Steam: The Building 2700 heating plant consists of three (3) watertube type boilers manufactured by the Keeler Company in 1952. The boilers are located within a mechanical equipment room in the basement level. Each boiler is rated at 427 horsepower and produces steam at 85 psig. One (1) boiler, labeled Boiler #1, is damaged and slated for demolition in the near future, the two (2) remaining boilers are in satisfactory operating condition. Boiler #3 has recently been converted to dual fuel capability, being able to fire on natural gas or No. 2 fuel oil. The natural gas capability came on line in late 1995. Under present contract conditions between the government and the gas utility company, the

natural gas supply to Building 2700 has been established as a non-interruptible type supply source for the next seven (7) years. Boiler #3 will be the primary source of steam, utilizing natural gas as the fuel source. Boiler #2 is capable of firing No. 2 fuel oil only and will be utilized as backup. The original 10 to 20 feet diameter (at roof height) breeching stack constructed of brick and estimated to be near 150 feet high (from ground level) remains active.

Table 3.4.1, Boiler Schedule

Boiler	Fuel	НР	Steam lbs/hr	Comment
B-1	No. 2 Fuel oil	427	14,300	Damaged, to be demolished
B-2	No. 2 Fuel oil	427	14,300	Back-up Boiler
B-3	No. 2 Fuel oil/Nat. Gas	427	14,300	Primary Boiler

Fuel oil is presently stored in a single 25,000 gallon underground fuel oil storage tank. Four (4) other 25,000 gallon underground storage tanks exist, though are no longer utilized to store fuel oil.

Steam produced by this heating plant is utilized in Buildings 2700 (R&D), 2704 (R&D), 2705 (Night Vision Lab), 2706 (Utility), and 2715 (Warehouse). Primary steam use is for building heating systems, with a small quantity utilized for Cafeteria/Kitchen equipment. Steam is also used as the source of heat for the Building 2700 domestic hot water system, which is currently not operable. Reheat using steam is required with some HVAC equipment where dehumidification controls are used.

Steam is generated at 85 psig and reduced downstream of the main headers to meet the individual system requirements, which are generally 15 psig or less. Condensate is returned to the heating plant by both a gravity return system and individual condensate pump and receiver sets located within the buildings and spaces served.

Condensate is returned to a common surge tank located in the basement Mechanical Equipment Room within Building 2700. Within the surge tank, returned condensate is mixed with treated make-up water and pumped to a deaerator. Make-up water is treated by zeolite type water softening equipment located next to the surge tank. Within the deaerator the mixture of make-up water and condensate return are combined with steam to become heated feedwater. During this mixing cycle, corrosive gasses are removed by the deaerator. The deaerator is a spray type that was manufactured by Stickle in 1955. Feedwater is pumped by one or two of the four (4) pumps connecting the deaerator with the boilers. The four (4) primary condensate transfer pumps are located on the first floor and return condensate from the main risers for the building. Approximately six (6) other small condensate pumps are installed in the plant.

The existing boilers have both continuous and intermittent blowdown systems.

A blowdown tank is located outdoors below grade. The tank is vented to atmosphere and drained to the storm water drainage system.

Note: Two (2) dedicated hot water boilers are presently being installed in Building 2706 for supporting the two-pipe (MCA) system in Building 2700.

The associated steam load, for the two-pipe system, will have to be separated in the existing and proposed steam loads to properly analyze the impact on applicable ECOs. Based on preliminary design drawings presented in August of 1995, the following Table 3.4.2, represents the selection for the boilers being installed in Building 2706.

Table 3.4.2, Boiler Schedule (Future Additions)

Boiler	Fuel	MBH	GPM	Comment			
B-5	No. 2 Fuel Oil/Nat. Gas	8,369	837	Installation in Progress			
B-6	No. 2 Fuel Oil/Nat. Gas	8,369	837	Installation in Progress			

Heating, Ventilation and Air Conditioning: The original 1955 building heating systems for Building 2700 were directly supplied by a building central steam distribution system. Building air conditioning units and ventilation units utilized steam for outdoor air preheat and in some instances supply air reheat requirements. Building heating was accomplished using individual perimeter steam convectors installed on each floor level, miscellaneous spaces such as storage, stairs, etc., were heated by steam unit heaters and convectors. The original building air conditioning systems had individual water cooled chillers installed within equipment rooms within close proximity of their associated air handling unit. The associated condenser water cooling towers were located on the building roof.

As stated in Section 2, Entech performed a limited audit of Building 2700 to determine utilization and the associated HVAC equipment installed. Field notes, existing design and facility drawings, and a maintenance equipment list were used as a basis for our findings. The maintenance equipment list is

included in Appendix 8.1. The results of this audit are summarized in Section 3.4.1 and below in some detail as it pertains to each sub-section in Section 3.4. In general, over a million cubic feet of air per minute (cfm) of connected air flow is installed in Building 2700. Of that total, about 6.5% or 65,000 (cfm) is considered outside air. The connected heating and cooling loads for Building 2700 are estimated to be near 10,000 MBH and the 1,800 tons, respectively.

The results of the Building 2700 HVAC equipment audit show that the majority of the twenty-five (25) original steam unit space heaters remain installed. Approximately twenty-one (21) unit heaters (UH) were identified on the basement and first floor levels. Of these about 4 or 5 are presently not operating, but for modeling and analysis purposes they will be assumed to be operating and functional. Of the forty-five (45) original steam fed, supply ventilation (SV) units, approximately ten (10) to fifteen (15) are still installed but are not operating. They are not included in the summary schedules and subsequently not considered in any of the models or analyses. Other than some of the exhaust fans and (1) cooling tower, apparent "dead" or unused equipment are not identified in this report.

Included in the 1982 MCA project was the construction of a new central steam to hot water heating system and a new central chilled water system, located in Building 2706. This system will be referred to throughout the report as either the MCA two-pipe system or as MCA water (MCA-HW and/or MCA-CHW).

Note: With the elimination of the SV units in conjunction with the questionable design concept used in 1982, many areas have been left without adequate

outside air to meet ASHRAE 62-1989. This is especially true for the perimeter areas on the second, third, and fourth floors.

MCA Hot Water Plant: Steam produced by the Building 2700 Boiler Plant is utilized in Building 2706 as the heat source for the central MCA hot water (HW) heating system. Two (2) steam to water heat exchangers, located in Building 2706, produce hot water which in turn is pumped to Building 2700. The heat exchangers are a shell and tube type, manufactured by Old Dominion, The Adamson Company. There are three (3) heating water distribution pumps available to circulate hot water (MCA-HW) from the heat exchangers to Building 2700. As stated previously, installation is in progress for the replacement of the heat exchangers with new hot water boilers. Construction is expected to be completed by the fall of 1996. This system usually operates from October 15 to May 15.

MCA Chilled Water Plant: The central chilled water (MCA-CHW) is produced by two (2) Trane Co. centrifugal water cooled chillers, rated at 690 tons cooling capacity each. Chilled water is circulated by three (3) pumps. Heat rejection for the chillers is accomplished by an induced draft, crossflow style cooling tower, manufactured by Baltimore Aircoil Co., Inc. The cooling tower is a four (4) cell unit located behind Building 2706. This tower has a nominal rating of 1,380 tons. There are three (3) condenser water pumps available for circulating water between the chillers and the cooling tower. This system usually operates from May 15 to October 15.

MCA 2-Pipe System: Alterations to the Building 2700 heating and air conditioning systems made with the 1982 MCA project included the installation of a two-pipe heating/cooling water distribution system. Two (2) independent heating water and chilled water distribution headers are located in Building 2706. Using control valves and hand operated valves, either heating water or chilled water can be distributed to Building 2700 heating/cooling equipment through two (2), two-pipe supply and return piping distribution systems. Control for each loop is by the use of pressure controllers. Bypass valves are located in Building 2706 insuring adequate flow through the chillers and the heat exchangers (new boilers). Two (2) pipe systems are generally sized for chilled water flows and subsequently the system pressures are reduced for the heating season because those flows (gpm) are lower (50% \pm) by design. One of the two-pipe systems serves equipment located within the north sections of Building 2700, and the other serves the south sections. Original building perimeter steam convectors were replaced with two-pipe heating/cooling fan coil units. Approximately 840 fan coil (FC) units generally satisfy heating and cooling requirements for the perimeter offices located on all floor levels. A few additional FC units are located in other areas. Approximately 2,100 ft of building perimeter is serviced by zoned sections of finned-tube radiation only utilizing the MCA-HW system during the heating season. Thirteen (13) convectors (C), four (4) cabinet unit heaters (CUH) and seven (7) unit heaters (UH), were identified doing the same.

Since 1982, new two-pipe heating/cooling air handling units were added to supplement office air conditioning demands and provide outdoor air ventilation, and in some cases the two-pipe heating/cooling distribution system also

satisfies the heating and air-conditioning equipment requirements for several interior renovated spaces such as electronics labs, computer labs, office space, etc. Renovations since 1982 in other parts of the building have utilized the two-pipe system adding to the original connected capacity. Forty-three (43) air handling units (AHU) were identified using this system. To date, the connected loads and flow for the two-pipe system are 700 tons of cooling requiring about 1,800 gpm of MCA-CHW and over 6,000 MBH of heating requiring about 700 gpm of MCA-HW. With these totals in mind, both systems are capable of handling more load based on the available cooling capacity and the adequacy of the sizing of the new dedicated hot water boilers.

Miscellaneous Cooling System: Numerous renovations over the years have incorporated air and water cooled DX and chilled water cooling equipment to satisfy individual space cooling needs. Of the original twenty-seven (27) air conditioning (AC) units installed only six (6) remain in operation today. Three (3) DX water cooled and three (3) chilled water - water cooled systems constitute the six (6) original units. Specialty areas, such as cleanrooms, have independent dedicated HVAC systems with equipment located on the building roof. Several water chillers have been installed throughout the building to satisfy space and process equipment cooling needs. A mix of air and water cooled condensers exist with these installations. Condenser water for the applicable chilled water and DX cooling equipment is supplied by four (4) towers on the roof. The original installation in 1955 included five (5) towers, however, in recent years Tower #5 was taken off line. Within the last ten (10) years, Towers #1 and #2 were replaced with new fiberglass units. There are

plans to replace Towers #3 and #4 in the near future with the same type and size as specified for Towers #1 and #2.

Three (3) cleanrooms located within the fourth floor level are served by HVAC units located on the building roof. An independent roof mounted air cooled water chiller satisfies the cooling requirements and building steam from the central distribution system satisfies supply air reheat requirements.

One (1) cleanroom, located on the second floor, is served by a self contained HVAC system also located on the building roof. This unit utilizes air cooled DX cooling equipment and a natural gas fired desiccant dehumidification system.

A small cleanroom, also located on the second floor level, incorporates air handling equipment located within close proximity of the cleanroom. An air-cooled water chiller located on the building roof satisfies this unit's cooling requirement, while building steam from the central distribution system is used at the air handler for supply air reheat requirements. Within Building 2700, there are approximately forty-five (45) miscellaneous air handling/air conditioning unit combinations in operation including the original units and the cleanroom units.

Over the years, the increased use of main frames, workstations and personal computers has led to the use of supplemental cooling in computer rooms, offices, labs, etc.. The primary method of achieving this has been to use specialized air recirculation units capable of removing large sensible cooling

loads from these spaces. These are commonly referred to as "Liebert units". Based on maintenance records and the field auditing process, Entech was able to identify forty-three (43) computer room type recirculation units.

<u>Humidification Control</u>: Areas within the building which require minimum humidity levels be maintained utilize local electronic type humidification equipment. No building steam is used for building space humidification. In some cases the original steam units are installed but as stated they are not in operation, and their function has been replaced by electronic devices, or the units have been deemed unnecessary.

Building 2700 Exhaust: The original 1955 building design incorporated 130 exhaust system fans installed in the building. These exhaust systems were intended to ventilate basic building spaces, such as toilet rooms and equipment rooms, and specialized building spaces such as laboratories. Today there are approximately 80 exhaust fans and scrubbers physically installed in Building 2700 with the majority being located on the roof. Approximately 50 of the original exhaust fans remain in place today. Individual space use within the building is in constant fluctuation, consequently, exhaust requirements change and exhaust fans are added and deleted. Many of the exhaust fans presently installed are not operable, and it is possible that in some instances exhaust fans which remain operable may in fact not be necessary. The connected exhaust flow from Building 2700 is estimated to be about 180,000 cfm. The relationship between connected exhaust to outdoor make-up air is about 3 to 1 or 180,000 cfm to 65,000 cfm. The building pressure in reference to the outdoors is noticeably negative when entering the first floor. Automatic doors

at the entrances have been turned off indicating a high pressure differential. These building conditions suggest that the fans are not capable of exhausting the air quantities originally specified. Discussions about this relationship will occur later in Section 5.4.3 on pages 5-33 through 5-35.

3.4.1 Equipment Schedules for Building 2700 HVAC Systems

The following schedules have been provided to summarize the HVAC equipment utilized by Building 2700. They include a summary Table 3.4.1.1 for heating and cooling equipment for the basement, first and mezzanine floors. Table 3.4.1.2 summarizes the equipment utilized by the second, third and fourth floors. The list was generated by defining the air side equipment on each floor. The tabled information includes the flows with the corresponding fan horsepowers, the heating load and source, the cooling load and source documenting related equipment requirements, and the location of the equipment and it's corresponding area served.

Table 3.4.1.3 documents the two large chillers in Building 2706. Table 3.4.1.4 tabulates the Cooling Tower data for the two buildings, and Table 3.4.1.5 does the same for Primary Pumps utilized for the two buildings which are not included as dedicated system pumps in the large summaries, Tables 3.4.1.1 and 3.4.1.2.

The exhaust fans and scrubbers installed in Building 2700 are documented in Table 3.4.1.6. The last summary Table 3.4.1.7, documents the process cooling and building support equipment not

identified in the others that utilize steam, electricity and in some cases, condenser water. The complete list of equipment schedules is shown below and the tables in the following pages.

Table 3.4.1.1	Building 2700	HVAC Equipment Summary
		(Basement, First floor and Mezzanine)
Table 3.4.1.2	Building 2700	HVAC Equipment Summary
		(Second, Third and Fourth floors)
Table 3.4.1.3	Building 2706	Chiller Schedule
Table 3.4.1.4	Building 2700/2706	Cooling Towers
Table 3.4.1.5	Building 2700	Primary Pump Summary
Table 3.4.1.6	Building 2700	Exhaust Summary
Table 3.4.1.7	Building 2700	Misc. Process Cooling & Support
		System Equipment

HVAC	Design/Site	Equip.	HVAC Airside Equipment - General Info	Area	Flowrate	1. Airsid	e/Fan Data TSP	(Evap. Fan) Supp.Fan		Est Hea Heating	Re-Heat	Heating Type Steam M
Hem	Designation	Type	Data/Reference/(Location)	Served	(cfm)	(cfm)	(mwg)	(hp)	(hp)	(MBH)	(MBH)	(lb/hr) (
1		AHU	McCluay LML(OA418 - JCALS)	(Cafeteria	21,300	2,13		20		452	0	492
3	 -	AC AC	:Carrier 38(Cafetena - above ceiling) :Carrier 38(Cafetena - above ceiling)	Cafetena office	1,600		0 2	·		- 0	0	
		AHU	unknown(OA400)	OA400 (J-CALS)	21,300	2,13				492		492
. 5	<u> </u>	AHU	unknown(Mech_Room (MR)-OA-1)	OA415 offices	3,000	45	0 2	2		59	0	
<u>6</u>		Recirc AC	Liebert(OA-413)	OA413 OA334	4,650 8 400		0 15	15				
8	 	Recirc AC	Liebert(OA-336)	OA336	4,650		0 1	15		0		
	AHU-B-3	AHU-MCA	-1rane C C (OA403)	OA403 offices	1,970		0 13		0 75	16	0	
10	L	AHU-MCA	unknown(OA418 - JCALS offices)	OA418 (J-CALS)	1,800		0 2			10	0	
11	 	AHU-MCA AHU-MCA	unknown(OA418 - JCALS offices) unknown(OA418 - JCALS offices)	OA418 (J-CALS) OA418 (J-CALS)	1,800		0 2			10	<u>°</u>	
13	-	AHU-MCA	unknown(OA418 - JCALS offices)	OA418 (J-CALS)	1,800		2			10		
14		AHU-MCA	unknown(OA418 - JCALS affices)	:OA418 (J-CALS)	1,800		0 2			10	0	
15		UH	(unknown(OA501-storage)	IOA501 IOA503	320		0.5			20	0	20
16		UH	unknown(OA503-storage) unknown(OA321-hallway)	IOA321	320 320		0 05			20	0	20
18		UH	unknown(OA326-Substations #2 & 6)	IOA326	320		0.5			20		20
19	· ·	UH	iunknown(OA328-Substations #2 & 5)	OA328	320		0.5	0.04		20	0	20
20	FC-1(9)	FC	iunknown(9 on West well)	OA400 Area - West	1,800		0 5			27	0	
21 22	C-4	Convector Fin-tube	unknown(Near Elevator #1 - Basement) unknown(625 ft of East/South wall)	JCALS/Coloreria/Lab			0 0			469		
23	-	AHU	iunknown(18110 Comp. Lab Mezz.)	B110,112/Mezz	889	6		1		16	0	
24		AHU	Atmostech(1B120 Cleanroom)	11B120 Cleanroom	20,000		4			0	0	
25		AHU	McQuey VSC(1B134 Print Shop)	1B134 Print Shop	21,300					0	0	
26		AHU AHU	junknown(18115) junknown(18115 - backup unit)	1B115 office/storage 1B115 office/storage	3600	. 541	. 3	3	·	40	o	40
28		AHU	Trane BWV180(18131 Computer Rm.)	IB131/Mezz	5,720	_	2 2	3		. 0	. 0	
29		AHU	Trane BWE120(1B131 Computer Rm.)	11B131/Mezz	2,542		33	2		0	0	
30		AHU	Trane BTE 120(1B131 Computer Rm)	18131/Mezz	2,860			15		0	0	
31	 	AHU	Trane BTE120(18131 Computer Rm.) (Trane BWE090(18131 Computer Rm.)	11B131/Mezz 11B131/Mezz	2,860					0	0	
33	AC-6	AHU	(Carner(MR - 1B123)	18131/M622	800					<u>c</u>	0	
34		AHU	Comfort Air(19138)	18138 Offices	3,810	57				42	0	42
35	AC-1(New)	AHU	Dunham Bush(1B142)	118142	8,700	1,30		7.5		9€	0	96
36	I	AHU UH	Chrysler 1005(1B141A)	18141A	1,905	286		0.04		21	0	21
37		UH	iunknown(Steirway #1) iunknown(1B107 - storage)	(Stairway #1 (1B107	250 640			01		40	·	15
39		UH	lunknown(1B109 - storage)	118109	640			01		40	·	40
40		ÚН	junknown(18111- storage)	118111	640		0.5	0 1		40	0	40
41		UH	(unknown (1B109 - storage)	18107	250			0 04		15	0	15
42		UH	:unknown (18110 - shop) :unknown(Stairway #3)	ISterway #3	500 250			0 04		30	0	30
44	C.4	Convector	lunknown(Near Elevator #1 - First floor)	Hallway - Elev #1	1 20					14		15
45	C-2(2)	Convector	(unknown(1B4L ladies room)	184L	0					11.8		
46		Fin-tube	junknown(420 ft of 1B100 Area))	Various	0;					315	0	
47		AHU AHU	(Cerner 50(1B202 - Photography) (Trane SAHB(1B205 - EMS Room)	18202 18205	1,905 ²	286				21	0	21 25
49	AHU-2	AHU-MCA	Trane C C.(1B204)	1B204	1,620				0.5	36	0	
50		AHU	Chrysler 1005(1B212)	18212	1,905	286				21	0	21
51		UH	junknown (1B212 - shop)	1B212	500			01		30	0	30
52 53		Fin-tube AHU-MCA	iunknown(200 ft of 1B200 Area)) iCarner 39(1B302 - offices)	iVanous	1 005			- 0		150	0	
54		AHU-MCA	Carrier 39(1B302 - offices)	1B302 1B302	1,905 2,667					15	0	
55		AHU-MCA	(Carrier 39(19306 - offices)	19306	2,667			2		15	0	
56		AHU-MCA	(Cerrier 39(18306 - offices)	18306	2,667			?_		15	0	
.57 68	AHU-3	AHU-MCA	(Trane C C (18322) (McQuay(18332 - offices)	118318,18324, Entrance 118332	2,600			15	1 5	- 26		
59	- : - 	AHU-MCA	McQuay('B332 - offices)	1B332	2,600			15				
60		UH	junknown(Steirwey #4)	Stairwey #4	200	C	0.5	0 03		10	Ö	10
61		UH	junknown(1B307))	18307	1,000			0 15		- 86	0	66
62 63	UH-21	UH UH	junknown(hallway near 1B322) junknown(1B321 Receiving)	heliway 18321	1,300		0.5	0 05		20 84	0	20 84
64	_:-:	UH	unknown(18321 Receiving)	18321	1,300			0.20	•	84	0	84
65		Recirc AC	junknown(1B322- above ceiling)	18324	9,000		2	5		C	0	
66	UH-23 UH-1107(New)	UH /ZVIM MCA	Junknown(Stairway #6)	Stainway #6	200			0.03		10	0	10
68	C-3	(7)UH-MCA Convector	iunknown((6) Bidg 2706 & (1)Nit Stor Area) iunknown(186L ladies room)	Bidg 2706 & Nitrogen Storage Area 186L	4,793	0		0 43		182	0	
69	C-2	Convector	lunknown(186G gentlemen room)	187G	0			0		5 9	0	
70	FC-1(11)	FC	runknown(11 in 1B300 Area)	Ivarious	2,200		0.5	0 18		33	٥	
71	CUH-1(2)	Fin-tube CUH	junknown(320 ft of 1B300 Area)	(entrance way	400			0.03		240	. 0	
73	- COT-1(2)	AHU-MCA	iunknown(New Entrance Area) iCarrier 39(1B401 - offices)	Intrance way	2,667	0		0 03		37	0	
74	AHU-4	AHU-MCA	Trane C C (18405 - Library)	ILibrary	3,100	1,178			0 75	26	- 0	
75	:	AHU-MCA	(Trane(above 18416 - offices)	18416 area	7,425	0	3	7.5		41	0	
76	-	AHU-MCA	(Trans(above 18416 - offices)	18500 area	7,425	0		7.5		41	0	
77	~ : 	Recirc AC Recirc AC	(Liebert(OA-413) (Liebert(OA-413)	OA413	4,650	0		15		<u>0</u> .	0	
79	- :	UH	unknown(Stairway #7)	Stairway #7	320	- 6		0 05		15	0	15
80		UH	junknown(Steinway #11)	Stairway #11	200		0.5	0.03		10	0	10
81	C-4	Convector	unknown(Near Elevator #7 - First floor)	Hallway - Elev #7	0	0		0		14	0	
82 83	FC-1(11)	FIN-tube	junknown(18405 - Library)) junknown(360 R of 18400 & 500 Areas)	lLibrary Ivarious	2,200	0		0 18	{	270	0	
84	- : 	AHU	[Translabove 18109 - Computer Area)	Mezz Computer Area	7,425	0		5		270 41	0)	
8.5		Recirc AC	(Liebert(above 18109 - Computer Area)	Mezz Computer Area	4,650	Ö		15			0	
86	CUH-1(2)	CUH	junknown(Main Lobby Entrance Area)	Mezz entrance way	400	0	0	0 03		37	. 0	
87	AHU-1		runknown(above Main Lobby)	Mezz Lobby Area	4,150	1,620		3	1.5	118	0	
88		AHU-MCA	(McCurey I S.) (Auditorium M. Area)	Build Mgr office/Mezz	7 700	1 640		03		4	- 0	
80	- : - 	AHU	(McQuay LSL(Auditorium M-Area)	Auditorium	7,700	1,540		75		110	- 0	110
91	AC-1	UHA	junknown(MR - 1aB138/Mezz)	11aB136 Mezz Area	8,165	1,650		5		132	0	132
	FC-1(5)	FC	junknown(1aB324/Mezz)	1eB138 Mezz Area	1,000	0		0 10		15	0	
92												
92 93		Fin-tube	unknown(250 ft of 1aB100 Areas)	!1aB100 Mezz Area	0			0		185	С	
		Fm-tube	unknown(250 f) of 1aB100 Areas)	Basement, First & Mezzenine	283,797	15,943		198	5	4,852	0	2,225

G:4130.06\SSVELECMOOWVACLST3.WK4

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 HVAC SUMMARY (BASEMENT, FIRST FLOOR & MEZZANINE)

TABLE 3.4.1.1

1	Est Airsic	te/fan Data (t.vap. f	an!	Est Heating Load	Heating Type (Est Flows/KW)	Est. Cooling Le	oad/Compressor	Cooling I	ype (Est. Cond. Flows/hp)
Area	Flowrate OA	TSP Supp.	Fan RA/OA	Heating Re-Heat	Steam - MCA-HW Electric	lotal lotal	Comp - Rating	CHW CHW Cond Cond	CHW DX-Cond. D
Served mena	(cfm) (cfm) 21,360 2,13		26 (hp)	(MBH) (MBH) 492	(lb/hr) (gpm) (Kw) 0 492	(MBH) (Tons) 360 30		Water(gpm) Water(hp) Water(gpm) Water(h	p) Air(hp) Water(gpm) W
rtens office		0 2		0	0	36			
rteria office	1,600	0 2	1	0	0	36			
00 (J-CALS)	21,300 2.13		20	492	0 492	360 30			
-15 offices -13	3,000 45 4,650	0 1	15	59	6.	60 84			- Domester
34		0 15	3		ő 	156 1;	7 10 1 07 3 20 1 15		Drycooler Drycooler
3 <u>£</u>	4,650	0	15	C	•	84	7 5 080		Drycooler
03 offices		0 13	1 0.75		2	18 1.5			
18 (J-CALS) 18 (J-CALS)		0 2 -	-}	10	1	36 3			
18 (J-CALS)		0	1	10	1	36			
18 (J-CALS)	1,800	0 :		10	1	36	3 3 0.78		
18 (J-CALS)		0 2 0 05	0 04	1C	<u> </u>	36 :	3 3 0.78		
03			0 04	25 26	20 20	0			
21			04	20	20	0			
26			0.04	70	20	0			
28 30 Area - West			0 04	20 27	20	45 38			
vay - Elev #1		0 0	0	14	3	45 3 !	4 0.78		
S/Cafeteria/Lab		Č	·	45.	4,	0			
.112/Mezz		9 .	1	10 1	3	24	1.12		
0 Cleanroom		0 4	25	0		179 15			45
14 Print Shop 15 office/storage	21,300 3600 54	0 3	20 3	40	<u></u>	360 30 65 5	75 112		90
15 office/storage				J					
11/Mezz		0 2	3	0 0		129 10 0	14 1 04		
11/Mazz		3	2	0	·	57 50			
11/Mezz		0 2	15	- c	<u> </u>	45 3 5 45 3 5			
11/Mezz		0 15	1	, i		30 20			
3	600	0 13	0.3	0 0		42 3 5	5 104		11 -
8 Offices	3,810 57		-2	45	42	120 10			
-2 -1A	8,700 1,30 1,905 28		75	<u> </u>		180 15 60 5		<u> </u>	45 15
way #1	250		04	1	15		·		
	64 0		0 1	40	40	0			
9			01	45	40	0			
;	840 250		0.1	45	40 15	0			
o .			01	30	30			· · · · · · · · · · · · · · · · · · ·	
√ay # 3			04	15 (15	0			
ay - Elev #1		<u> </u>	0	11 8	 	0			
us us		0 0	0	315 0		0	·		 _
2	1,905 286		1.	21 (21	60 5	7 5 1 12		0
5	2,286 343		1	25 (25	72 δ	7 5 0 93		0
4	1,820 C		15 05	36 C		63 5.3 60 5			15
2			01.	30 0		0	75 112		15.
US.	0	00	0	150 0		0			
2	1,905	22	_1	10 0		60 5			
5	2,867 C	2	2	15 C	1	60 5 80 5	5 0.78 5 0.78		
	2,667 (2	2	15 0		60 5	5 0.76		
5 1B324 Entrance	4,210 (15 15	26 0	25	114 9 5	10 0.78		
			15	14 0	1	60 5 60 5	5 0.78 5 0.78		
vey 64	200 0		03	10 0	10				
-	1,000		15	66 0	66	0			
<u>*</u> Y			20	20 0 84 0	20	0			
· · · · · · · · · · · · · · · · · · ·			20	84 0	84	0			
	9,000 0) 2	5	0 0		180 15	16 0.78		45. To
7706 # Nersean States Ave.			03	10 0	10	0			
2706 & Nitrogen Storage Area	4,793 0 0 0		43	18? 0 4 3 0	19	0	•		
	0 0	c	0	59 0	i	0			
1	2,200 0		16	33 0	3	55 4.6	5 0.78		
3 Yes way	0 0 400 0		0	240 0 37 0	24				
ice way	2,667 0		2	15 0	 	<u> </u>	5 0.78		
1	3,100 1,178	20	2 0 75	2€ 0	2.5	114 9.5	10 0.78		
9103	7,425 0		5	41 0	4	168 14	15 0.78		
3	7,425 0 4,650 0		15	0 0 0	ļ	168 14 60 5	15 0.78		Compaler
3	4,650 0	1	1 5	0 0		60 5	75 1 12 75 1 12		Drycooler Drycooler
/ay #7	320 0			15 0		0			
rey #11 ay - Elev #7	200 0 0 0		03	10 0 14 0		0			
A - CAAA			18	14 0 33 0		55 4.6	5 0.78		
,	0 0	0	0	270 0		0 4.6	0.78		
Computer Area	7,425 0	:	5	41 0	Yes(0)	60 5	7.5 1.12		
Computer Area	4,650 0		5	0 0	Yes(0)	60 5	7.5 1.12		Drycooler
entrance way Lobby Area	400 0 4,150 1,620		03 3 15	37 0 118 0	4	0 157 13.1			
Mgr office/Mezz	80 0 0	13 (3	4 0	04	48 4	4 0.78		
WILLIAM TO THE STREET	7,700 1,540	3 7	5	110 0	110	180 15	20 099	45 16	3
offurn Area	7,700 1,540		5	110 0	110	180 15	20 099	45 16	3
16 Mezz Area 38 Mezz Area	8,165 1,650 1,000 0		5	132 0 15 0	132	180 15 25 2.1			45 T
10 Mezz Area			6	18+ 0	15	23,2.1	2 0.78		
nent, First & Mezzahine	283,797 15,943	. N/A 1	98 5	4,85. 0	2,225 260 3	5,294 439	557 095	90 3 0	0 6 310
		1	1			•		and the second s	
		 			<u> </u>			<u> </u>	



CHW		Cooling Type (Est.	ond Flows/hp1			Cooling Equipment		m Total	_	
	CHW Cond	Cond CH		DX-Cond_	DX	MCA-CHW	Field	Total	lotal	HVAC
Water(gpm) V	Water(hp) Water(gpm				Air(hp)	Water(gpm)	Data/Reference/(Location)	(hp)	(low)	Rem
					- 6	 	McCluay ALP(Outside on grade)	66 1	49 3	
						 	Carner 38(Location unknown)	6.0		ļ
							Carrier 38(Location unknown) unknown (Outside on grade)	661		
	~				<u>_</u>		unknown(Outside on grade)	10 6		
			Drycooler	1.5	1.5		Liebert(Outside on grade)	14 5	10 8	
			Drycooler	2 C	23		Liebert(Outside on grade)	27 3	20 3	
			Drycooler	1.5	15		Liebert(Outside on grade)	12 0		
						12		3 1	2 3	
ļ		·				7	Plant Chilled Water @ 55 degrees F	42	3.1	
ļ						<u>'</u> ;	Plant Chilled Water @ 55 degrees F	42	3 1	
						<u>'</u> ,	Plant Chilled Water @ 55 degrees F	4 2	31	1
							Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	42	3.1 3.1	1
 							N/A		0 03	
		· · · · · · · · · · · · · · · · · · ·					NA	00	0 03	
							N/A	0.0	0 03	
							NVA	0.0	0 03	1
		I					N/A	0.0	0 03	1
L						10	NVA	1 _ 41	3 04	
L							NVA	0.0	0.00	2
					- 0.6		N/A	0.0	0.00	7:
			45	Town 1	0 5 Yower 1		unknown (Outside on grade)	80	6.0	2
		+	90	Tower 1	Tower 2		Compressor in 18120 & tower on roof Packaged unit whower on roof	44 7 59 7	33 3 44 5	
			 -		1		unknown (Outside on grade)	12 0	90	2
							unknown (Outside on grade)	00		21
					2		Trane BWA 180(Outside on grade)	191	14 3	20
					1		Trane BWE 120(Outside on grade)	10 7	80	21
					1		Trane BWA 120(Outside on grade)	7 1	5 3	30
		<u> </u>			!		Trane BWA 120(Outside on grade)	7 1	5 3	31
·				1	0 75		Trane BTA 090(Outside on grade)	4.5	3.4	3
		 	11	Tower 2	Tower 2		Compressor in 1B123 & tower on root	5 ?	3 9	3:
	· · · · · · · · · · · · · · · · · · ·		45	Tower ?	Tower 2		Comfort Air(Outside on grade) Compressor in 18142 & lower on roof	19_3	14.4	34
			15	Tower 3	Tower 3		Compressor in 18141A & tower on roof	27 5 8 6	20 5	35
			-				N/A	68	0 03	36
							N/A	0 1	0 07	38
							AVA	0 1	0 07	39
							N/A	0 1	0 07	40
		<u> </u>					N/A	0.0	0 03	41
							N/A	0.1	0 07	42
					 }		N/A	0.0	0 03	43
		+					N/A	00	0.00	
		 					N/A	0.0	0.00	45
		+		0			unknown(Location unknown)	9.8	- 0 00 7 3	46
		I	0	0	1		Trane(Outside on grade)	10 0	75	48
						13	Plant Chilled Water @ 55 degrees F	7 5	5.6	49
			15	Tower 3	Tower 3	!	Compressor in 18212 & tower on roof	8.6	6.4	50
		 					N/A	0 1	0 07	51
		 					N/A	0.0	0 00	52
i		 				12	Plant Chilled Water @ 55 degrees F	6.3	47	53
		+					Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	68	5 1	84
		 				-12	Plant Chilled Water @ 55 degrees F	0.8	5 1 5 1	55 56
						23	Plant Chilled Water @ 55 degrees F	12 9	9 6	57
						12 /	Plant Chilled Water @ 55 dagrees F	07	5 0	54
						12	Plant Chilled Water @ 55 degrees F	6 7	5.0	59
		ļ			I	!	NA	0.0	0.02	60
							WA	02	0.11	61
							WA	01	0.04	62
		 					N/A	02	0 15	63
			46	Tower 3(?)	Tower 3			02	0 15	84
		 	- 				Compressor in 1B322 & tower on root	20 7	0 02	65
							WA_		0 32	66 67
							N/A	00	0 00	68
		· — —					WA	0.0	0 00	69
										70
						12	VA	5.0	3 71	′
							VA VA	5 0	0 00	71
							VA VA	5 0 0 0 0 0	0 00 0 02	71 72
						12 F	WA WA Plant Chilled Water Ø 55 degrees f	5 0 0 0 0 0 6 8	0 00 0 02 5 1	71 72 73
						12 F 23 F	WA WA WA WA WA WA WA WA WA WA WA WA WA W	5 0 0 0 0 0 6 8 12 7	0 00 0 02 5 1 9 5	71 72 73 74
						17 F 23 F 34 F	WA WA WA VIA VIA VIA Chilled Water @ 55 degrees f Jiant Chilled Water @ 55 degrees f Jiant Chilled Water @ 55 degrees F	50 00 00 68 127 221	0 00 0 02 5 1 9 5 16 5	71 72 73 74 75
			Drycooler	15	15	17 F 23 F 34 F	WA WA VA VIA Plant Chilled Water @ 55 degrees; f Jant Chilled Water @ 55 degrees; F	50 00 00 68 127 221 221	0 00 0 02 5 1 9 5 16 5	71 72 73 74 75 76
			Drycooler Drycooler	15	1 5 1.5	12 F 23 F 34 F 34 F	WA WA WA VIA VIA VIA VIA VIA VIA VIA VIA VIA VI	5 0 0 0 0 0 6 8 12 7 22 1 22 1 12 0	0 00 0 02 5 1 9 5 16 5 16 5	71 72 73 74 75 76
			Drycooler Drycooler	15		12 F 23 F 34 F 34 F	WA WA VA VIA Plant Chilled Water @ 55 degrees; f Jant Chilled Water @ 55 degrees; F	50 00 00 6.8 12.7 22.1 22.1 12.0	0 00 0 02 5 1 9 5 16 5 16 5 9 0	71 72 73 74 75 76 77
						12 23 34 34	WA WA WA WA WA WA VIANT Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water @ 55 degrees ! Viant Chilled Water	5 0 0 0 0 0 6 8 12 7 22 1 22 1 12 0	0 00 0 02 5 1 9 5 16 5 16 5	71 72 73 74 75 76 77 78
						12 F 23 F 34 F 34 F	WA WA WA VIA Plant Chilled Water @ 55 degrees f Jant Chilled Water @ 55 de	50 00 00 68 127 221 221 120 01 00	0 00 0 02 5 1 9 5 16 5 16 5 9 0 9 0	71 72 73 74 75 76 77
						17 23 34 34 34	WA WA WA WA WA WA WA WINTERN Chilled Water @ 55 degrees ! Want Chilled Water @ 55 degrees ! Want Chilled Water @ 55 degrees ! WA WA WA WA WA WA WA WA WA WA WA WA WA	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 16 5 9 0 9 0 0 04 0 02 0 00 3 71	71 72 73 74 75 76 77 78 79 80 81 82
						17 12 23 34 34 34 4 4 4 4 4 4	WA WA WA Plant Chilled Water @ 55 degrees; f Jant C	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 16 5 9 0 0 04 0 02 0 00 3 71 0 00	71 72 73 74 75 76 77 78 70 80 81 82
			Dryccoler	15	1.5	12 5 23 5 34 5 34 6 12 6	WA WA VIA VIA VIA VIA VIA VIA VIA VIA VIA VI	5 0 0 0 0 0 6 8 12 7 22 1 22 1 12 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 9 0 0 04 0 02 0 00 3 71 0 00 9 9	7.1 72 73 74 75 76 77 78 79 80 81 82 63
						12 23 34 34 12 12	WA WA WA WA Flant Chilled Water @ 55 degrees ! Flant Chilled Water @ 55 degrees ! Flant Chilled Water @ 55 degrees ! Flant Chilled Water @ 55 degrees F Flant Chilled Water @ 55 degrees F Flant Chilled Water @ 55 degrees F Flant Chilled Water @ 55 degrees F Flant Chilled Water @ 55 degrees F Flant Chilled Water @ 55 degrees F Flant Chilled Flant F	50 00 00 68 127 221 120 120 01 00 00 00 50 00 133	0 00 0 02 5 1 9 5 16 5 9 0 9 0 0 04 0 02 0 00 3 71 0 00 9 9	7.1 72 73 74 75 76 77 78 80 81 82 83
			Dryccoler	15	1.5	12 12 12 12 12 12 12 12	WA WA VIA VIA VIA VIA VIA VIA VI	50 00 00 68 127 221 120 120 01 00 50 00 00 133 120 00	9 00 0 02 5 1 9 5 16 5 9 0 9 0 0 04 0 02 0 00 3 71 0 00 9 9 0 00	7.1 72 73 74 75 76 77 78 80 81 62 83 84 85
			Dryccoler	15	1.5	12 23 34 34 12 12 11 11	WA WA WA Plant Chilled Water @ 55 degrees ! Plant Chilled Water @ 55 degrees ! Plant Chilled Water @ 55 degrees ! Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 0 0 0 0 0 0 0 0 0 13 3 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 9 0 0 04 0 02 0 00 9 9 9 0 0 00 9 9 9 0	7.1 72 73 74 75 76 77 78 80 81 82 63 84 84 86 87
4			Dryccoler	15	1.5	12 p 23 p 34 p 34 p 12 p 12 p 12 p 13 p 14 p 15 p 16 p 16 p 16 p 16 p 16 p 16 p 16 p 16	WA WA WA VIA VIA VIA VIA VIA VIA VIA VIA VIA VI	50 00 00 6 8 12 7 22 1 12 0 12 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 9 0 0 04 0 02 0 00 3 71 0 00 9 9 0 00 9 9 13 6 3 4	7.1 72 73 73 75 76 77 78 70 80 81 82 83 84 85 86
45 45	10, 10, 10, 10, 10, 10, 10, 10, 10, 10,		Drycooler Drycooler	1.5	1 1 1 5	12 F 23 F 34 F 34 F 12 F 11 F 10 F 10 F	WA WA WA WA WA WA WA WA WA WITH Chilled Water @ 55 degrees f Itent Chilled Water @ 55 degrees f Itent Chilled Water @ 55 degrees f Itent Chilled Water @ 55 degrees F	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 0 0 0 0 0 0 0 0 13 3 12 0 0 0 0 1 0 0 12 0 13 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00 0.02 5.1 9.5 16.5 16.5 9.0 0.04 0.02 0.00 3.71 0.00 9.0 0.00 9.0 0.00 9.0 0.00 9.0 0.00 9.0 0.00 9.0 0.00 9.0 0.00 9.0 9.	7.1 7.2 7.3 7.4 7.5 7.6 7.7 7.8 8.0 8.1 8.2 8.3 8.4 8.5 8.6 8.6 8.7 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6
45 45	16, 16		Drycooler Drycooler	1.5	1 1 1 5	12 F	WA WA WA VIA VIA VIA VIA VIA VIA V	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 5 0 0 0 0 0 13 3 12 0 0 1 2 0 1 0 1 2 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	0 00 0 02 5 1 9 5 16 5 9 0 9 0 0 00 3 71 0 00 9 9 9 0 0 00 3 3 4 26 4	7.1 7.2 7.3 7.3 7.4 7.5 7.6 7.7 7.7 7.8 8.0 8.0 8.1 8.2 8.3 8.4 8.5 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6
	10, 10		Drycooler Drycooler	1.5	1.5	17	WA WA WA WA WA WA WA WA WA WA WA WA WA W	5 0 0 0 0 0 6 8 12 7 22 1 12 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 13 3 12 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0	9 00 0 02 5 1 9 5 16 5 16 5 9 0 9 0 0 04 0 02 0 00 3 71 0 00 9 9 9 0 0 00 3 71 0 00 9 0 9 0 0 00 3 71 0 00 0 00 0 00 0 00 0 00 0 00 0 00 0	7.1 7.2 7.3 7.3 7.4 7.5 7.6 7.7 7.7 7.8 8.0 8.1 8.1 8.2 8.3 8.4 8.6 8.6 8.7 8.8 8.8 8.8 8.8 8.9 8.9 8.9 8.9 8.9 8.9
45	16		Drycooler Drycooler 3 3 45	1.5 1.5 Tower 2	1.5 1 1 5 3 3 Tower 2	12	WA WA WA VIA VIA VIA VIA VIA VIA V	5 0 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 5 0 0 0 0 0 13 3 12 0 0 1 2 0 1 0 1 2 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	0 00 0 02 5 1 9 5 16 5 9 0 9 0 0 00 3 71 0 00 9 9 9 0 0 00 3 3 4 26 4	7.1 7.2 7.3 7.4 7.5 7.6 7.7 7.8 8.0 8.1 8.2 8.3 8.4 8.5 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6
	16 10 10 10 10 10 10 10 10 10 10 10 10 10	0	Drycooler Drycooler	1.5	1.5	17	WA WA WA WA WA WA WA WA WA WA WA WA WA W	5 0 0 0 0 0 6 8 12 7 22 1 12 0 0 1 2 0 0 0 0 0 0 0 0 0 0 0 13 3 12 0 0 1 2 0 12 0 12 0 12 0 12 0 13 0 14 0 15 0 16 0 16 0 17 0 18 0 18 0 18 0 18 0 18 0 18 0 18 0 18	0 00 0 00 5 1 9 5 16 5 9 0 9 0 0 04 0 02 0 00 3 71 0 00 9 9 9 0 0 00 2 13 6 3 4 26 4 16 7 17 0	71 72 73 74 75 76 77 78 79 80 81 81 82 83 84 85 86 87 88
45	16	0	Drycooler Drycooler 3 3 45	1.5 1.5 Tower 2	1.5 1 1 5 3 3 Tower 2	12	WA WA WA WA WA WA WA WA WA WA WA WA WA W	5 0 0 0 0 6 8 12 7 22 1 12 0 12 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 13 3 12 0 0 0 13 3 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 00 0 02 5 1 9 5 16 5 9 0 0 04 0 02 0 00 3 71 0 00 9 9 9 0 0 02 13 6 26 4 26 4 16 7 1 70 0 00	7 7 7 7 7 7 7 7 7 7 7 7 7 8 8 8 8 8 8 8

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IVAC Item		T	HVAC Airaide Equipment - General Inform			Est Airse				Est Heating L		Heating
	Design/Site	Equip Type	Field Data/Reterence/(Location)	Area Served	flowrate (ctm)	OA (cfm)		Supp. Fan	RA/OA (hp)		Heat ABH)	Steam (Ib/hr)
94	Designation AC-2	AHU	unknown(MR - 21 South 2C/D100 Area)	20110 offices	11.800	800	(in w q)	<u>(np)</u> 5	[hp]	125	мвні	126
95		Recirc AC	Datac(2D106/Computer room)	2D106	2,800	0		15				140
	AHU-2-1	AHU-MCA	Trane C C (MR - 21-A South 2C/D100 Area	2C/D100 offices/corridors	8,230	1,235	3.0		3	3€		
97	AC-3	AHU	unknown(MR - 22 North 2C/D100 Area)	2D130 electronics lab	10 200	2 100		. 5		209	1	209
98	AHU-2-2	AHU-MCA	Trane C C (MR - 22-A North 2C/D100 Area	2C/D100 offices/corridors	8 140	1.221	2.5	7.5	3	73		
99		AHU	Cargoaire(located on roof)	2D140 Dryroom	6,252	625		10		66		
100		AHU	unknown(MR-22 North 2C/D100 Area)	20204 lab area	10,667			10		c		
101	FC-1(78)	FC	unknown(78 in 2C/D100 area)	2C/D100 perimeter areas	15.600	0		1.3		234		
102	C-4	Convector	unknown(Near Elevator #1 - Second floor)	Hallway - Elev #1	<u> </u>	0		0		14		
103		AHU-MCA	Carrier 39LV(MR-23 East 2C/D200 Area)	2D210 lab area	8 000	0		75				
104	AHU-2-3	AHU-MCA	Trane C C (MR-23 East 2C/D200 Area)	2C/D200/300 offices/corridors	13,685	2 045	25	15	5	124		
105 106	FC-1(35) AC-14	FCAHU	runknown(35 in 2C/D200 area) runknown(MR - 23 East 2C/D200 Area)	2C/D200 perimeter areas 2D306 lab area	7 000	2 250	E.S.	0.6		105 393		303
107	AC-14	AHU	unknown(2D310 Cleanroom)	2D310 Cleanroom	2,600	1,900	<u>:</u>	75		393		
108		AHU	Trane SWUB(2C325)	2C325	4 000	1,000						
109		AHU	Chrysler(2D330)	2D330 area	13,000	0	2.5	10				
110		Recirc AC	iLiebert(2D335/Computer room)	12D335	2 800	0	1	15		0	1	
111		AC	Hideaway Pkg Unit(2D337)	20337	1.067	0	15	0.5		0		
112	AHU-2-4	AHU-MCA	Trane C C (MR-24 East 2C/D300 Area)	2C/D300 offices/corridors	7,940	1,180	2.6	7.5	3	72		
113	FC-1(83)	FC	junknown(83 in 2C/D300 area)	2C/D300 penmeter areas	16,600	0	0.5	14		249	ļ	
. 114	AHU-2-4A	AHU-MCA	(Trane C C (MR-24 East 2C/D300 Avea)	2C/D400 offices/corridors	5.025	760	2.0	5	15	45		
115		Recirc AC	Datac(2C405/Computer room) Datac(2C407/Computer room)	2C405	2,800	0	·}			0 0	∤	
116	FC-1(41)	Recirc AC	iunknown(41 in 2C/D400 erea)	12C/D400 perimeter areas	2,800 8,200	0	0.5	0 7		123		
118	AHU-2 5	AHU-MCA	itrane C C (MR-25 South 2C/D400 Area)	2C/D400 offices/corndors	4,390	660	2 3		15	39	}	
119	AHU-2-5A	AHU-MCA	Trane C C (MR-25 South 2C/D400 Area)	2C/D400/500 offices/corridors	2,750	410	20		1 5	25		
120	FC-1(19)	FC	:unknown(19 in 2C/D500 area)	2C/D500 perimeter areas	3 800	0	0.5	03		57		
121	C 5	Convertor	:unknown(Near Elevator #7 - Second floor)	Hailway - Elev #7	C	ŗ	0	0		12		
122	AHU-3 1	AHU-MCA	(Frane C C (MR-31 South 3C/D100 Area)	3C/D100 offices/corridors	6,855	1,030	2.5	7.5	2	62		
123	AHU-3-1A	AHU-MCA	Trene C C (MR-31 South 3C/D100 Area)	3C/D100 offices/corndors	4 140	555	2.5	5	1.5	38		
124		AHU	Copeland WZW(3D114)	(3D114 area	8,000	0	2	5		c		
125	AHU 3 2	AHU-MCA	Trane C.C. (MR-32 North 3C/D100 Area)	3C/D100 offices/corndors 3C/D100/200 offices/corndors	6,420	965	25	7.5	2.5	58		
_126	AHU-3-2A	Recirc AC	Trane C.C (MR-32 North 3C/J100 Area)	13C141	4 410	660 0	23	7 5	15	40		
127		Recirc AC	(Liebert/3C143/Computer room)	I3C143	3,360 4,650	0		15		°	∤	
- 128 129	FC-1(95)	FC FC	unknown(95 in 3C/D100 sres)	3C/D100 perimeter areas	19,000			16		285		
130	C-5	Convector	unknown(Near Elevator #1 - Third floor)	Hallway - Elev #1	19,000					12		
131		(2)AHU	York(MR - 33 East 3C/D200 Area)	3D306-3C321 tab area	32,000	3,200	. 3	30		459		458
132		FC's(?)	unknown(Rooms 3D314 - 3C321)	3D314 - 3C321 leb area	8,000	C .	1	2		· · · · · ·		
133	_AHU-3-2	AHU-MCA	Irane C C (MR-33 East 3C/D200/300 Area)		12,820	1 511		1:	5	11(
134	FC-1(35)	FC	iunknown(35 in 3C/D200 area)	3C/D200 penmeter areas	7,000	C	0.5	0 f·		105		
135		AHU	(Climetrol(MR-34 South 3C/D300 Area)	3D330 Cleanroom	25 000	5,000	3.	20		358		358
136	AHU-3-4	AHU-MCA	Ilrane C C (MR-34 South 3C/D300/400 Area)	3C/D300/400 offices/corridors	6,600	990	2 5		2.5	59		
137	FC-1[83]	FC	iunknown(83 in 3C/D300 area)	3C/D300 perimeter areas	16 500	<u>0</u> .	0.5	14.		249	 	
138		Recirc AC	iLiebert(3D402/Computer room) ILiebert(3D402/Computer room)	I3D402	4,650	0		15		0	\longrightarrow	
140		Recirc AC	Liebert(3D404/Computer room)	13D404	8,400	0	15	7.5			\rightarrow	
141	— : —-	Recirc AC	(Liebert(3D406/Computer room)	13D406	4,650	0		15		0	-	
142		Recirc AC	Liebert(3D406/Computer room)	i3D406	4,650	. 0	1	15		Ö		
143		Recirc AC	(Liebert(3D409/Computer room)	(3D409	5,650	0	15	2		6		
144		Recirc AC	Liebert(3D410/Computer room)	(3D410	8,400	0	1.5	3		0		
145		Recirc AC	Liebert(3D412/Computer room)	3D412	10 200	0	15	5		0	I	
146	FC-1(40)	Recirc AC FC	iLiebert(3D412/Computer room) iunknown(40 in 3C/D400 area)	3D412 3C/D400 perimeter areas	10,200	<u>0</u> .	0.5	0.7		- 0.		
147	AHU-3-5	AHU-MCA	Trane C C (MR-35 South 3C/D400 Area)	3C/D400 perimeter stells	8,000 6,960	1.045	23	75		120 63		
149	AHU-3-5A	AHU-MCA	(Trane C C (MR-35 South 3C/D400 Area)	:3C/D400/500 offices/corridors	1 785	270		20	0 75	16		
150	FC-1(19)	F.C.	(unknown(19 in 3C/D500 area)	3C/D500 perimeter areas	3,800	0	0.5	03		57		
151	C 5	Convertor	unknown(Near Elevator #7 - Third floor)	Hallway - Flev #7	0		0	n		12		
152	AC-7	AHU	unknown(MR - 41 South 4C/D100 Area)	40110 lab/offices	16,300	2,000	3.	10		264		264
153	AC-1(New)	AHU	Governair RSA06(located on roof)	(4D130 Cleanroom (Class 100)	25 000	5,000	5.	40		0	563	563
154	AC-2(New)	AHU	Governair RSA03(located on roof)	(4D130/140 Cleanrooms(Class 100)	15,000	3,000	·	30,		0,	317	317
155	AC-3(New)	AJ IU	Governair RSA02(located on roof)	4D130 Cleanroom (Class 10)	10,000	2,000	··	15		0	229	22R
156	AHU-R-1	AHU-MCA	Carrier ?(in/above 4D140 Cleanroom) Trane C C (On roof above 4C/D100 Area)	4D140 Cleanroom 4C/D100 offices/corridors	10,700 7,270	1 310	25	751	;	79	∤-	
150	AHU-R-2	AHU-MCA	Ifrane C C (On roof above 4C/D100 Area)	4C/D100 offices/corndors	5,305	955	23	75		58		
159	FC-1(83)	FC	runknown(83 in 4C/D100 ares)	I4C/D100 perimeter areas	16,600	0	05	14		249		
160	C 5	Convector	runknown(Near Elevator #1 - Fourth floor)	IHallway - Elev #1	0	0	0	0		12		
161		Recite AC	Date Air(4C205/Computer room)	4C205 Area	5,650	0	1.5	2		0		
162		Hecirc AC	Data Air(4C209/Computer room)	4C209 Aren	5,650	0	15			0		
163		Recirc AC	Data Air(4C211/Computer room)	4C211 Area	5.650	c	1.5	2.	I	0	J	
184		Hecirc AC	Data Air(4C213/Computer room)	4C213 Aten	5,650	o.				c		
165		Recirc AC Recirc AC	Edpac(4D204/Computer room) Edpac(4D204/Computer room)	14D204 Area	5 650 5 650		15	2.			 -⊦	
		Recirc AC	Data Air(4D208/Computer room)	4D208 Area	9,300		15					
			Date Ar(4D210/Computer room)	4D210 Area	2,800	- -		1		0		
167		Recirc AC	Data Air(4D214/Computer room)	40214 Area	2,800	0					+	
167					8,035	1,455	3 3	10	31	87		
167 168 169 170	AHU-R-3	AHU-MCA	Trane C C (On roof above 4C/D300 Area)	4C/D100/200/300 offices/corridors						120		
167 168 169 170 171	AHU-R-3 FC-1(40)	AHU-MCA FC	iTrane C C (On roof above 4C/D300 Area) iunknown(40 in 4C/D200 area)	4C/D200 perimeter areas	8,000	0,	0.5	0 7				
167 168 169 170 171 172		AHU-MCA FC Recirc AC	iTrane C C (On roof above 4C/D300 Area) iunknown(40 in 4C/D200 area) jLiebert(4D308/Computer room)	4C/D200 perimeter areas	8,000 5,650	0	1.5	07		0		
167 168 169 170 171 172 173		AHU-MCA FC Recirc AC Recirc AC	Trane C C (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) Lieber(4D308/Computer room) Edpac(4D317/Computer room)	4C/D200 perimeter alreas 4D308 4C317	8,000 5,650 8,400	0	15 15	0 7 2 3		0		
167 168 169 170 171 172 173 174	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC	If rane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) Lieber(4D308/Computer room) Edpac(4D317/Computer room) Lieber(4D324/Computer room)	I4C/D200 perimeter areas I4D308 I4C317 I4D324	8,000 5,650 8,400 8,400	0 0 0	1.5 1.5 1.5	0 7 2 3		0 0 0		
167 168 169 170 171 172 173 174 175	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC	Hrane C.C. (On roof shove 4C/D300 Area) unknown(40 in 4C/D200 area) [Lieber(140308/Computer room) [Edpac(4D317/Computer room) [Lieber(140324/Computer room) [Lieber(140326/Computer room)	4C/D200 permeter areas 4D308 4C317 4D324 4D326	8,000 5,650 8,400 6,400 4,650	0 0 0	15 15 15	07 2 3 3		0 0 0 0		
167 168 169 170 171 172 173 174 175 176	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC	If and C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) jueber(4D308/Computer room) Edpac(4D317/Computer room) jueber(4D326/Computer room) jueber(4D326/Computer room) jueber(4D326/Computer room)	IAC/J0200 perimeter éreas IAD308 IAC317 IAD324 IAD326 IAD326	8,000 5,650 8,400 4,650 4,650	0 0 0 0	15 15 15 1	07 2 3 3 15		0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC	Irlane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) [Lebert(4D308/Computer room) [Edpac(40317/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room)	4C/D200 permeter areas 4C/D208 4C/D317 4D/D324 4D/D326 4D/D328 4D/D328	8,000 5,650 8,400 8,400 4,650 4,650 4,650	0 0 0 0 0	15 15 15 1 1	07 2 3 3 15 15	15	0 0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC	If and C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) jueber(4D308/Computer room) Edpac(4D317/Computer room) jueber(4D326/Computer room) jueber(4D326/Computer room) jueber(4D326/Computer room)	IAC/J0200 perimeter éreas IAD308 IAC317 IAD324 IAD326 IAD326	8,000 5,650 8,400 4,650 4,650	0 0 0 0	15 15 15 1 1 1 23	07 2 3 3 15 15 15	15	0 0 0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AU-MCA FC Recirc AC	Irlane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D324/Computer room) Liteber(4D324/Computer room) Liteber(4D326/Computer room) Liteber(4D328/Computer room)	I-C/D200 perimeter area; I-D308 I-D308 I-D307 I-D3	8,000 5,650 8,400 8,400 4,650 4,650 4,650 5,135	0 0 0 0 0 0 0	15 15 15 1 1	07 2 3 3 15 15	15	0 0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177 178 179	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC	Irlane C.C. (On roof shove 4C/D300 Area) unknown(40 in 4C/D200 area) Liebert(4D308/Computer room) Edpac(4D317/Computer room) Liebert(4D34/Computer room) Liebert(4D326/Computer room) Liebert(4D326/Computer room) Liebert(4D328/Computer room)	4CD200 permeter areas 4C9308 4C937 4D924 40326 40326 40328 4C9300 offices/porridors 4C/0300 permeter areas	8,000 5,650 8,400 4,650 4,650 4,650 5,135 17,600	0 0 0 0 0 0 0 925	15 15 15 1 1 1 1 23	07 2 3 3 15 15 15	15	0 0 0 0 0 0 0 56 264		
167 168 169 170 171 172 173 174 175 176 177 178 179 180	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC	Irlane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) [Lebert(4D308/Computer room) [Edpac(4D317/Computer room) Lebert(4D328/Computer room) Lebert(4D328/Computer room) Lebert(4D328/Computer room) Irlane C.C. (On roof above 4C/D300 Area) unknown(48 in 4C/D300 area) [Datac(4C405/Computer room) Lebert(4C405/Computer room) Lebert(4C405/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas	8,000 5,650 9,400 4,650 4,650 4,650 4,650 5,135 17,600 8,400	0 0 0 0 0 0 0 0 925 0	15 15 15 1 1 1 1 23 05 15	07 2 3 3 15 15 15 5 15 3	15	0 0 0 0 0 0 0 56 264		
167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183	FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC	Irlane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 Area) [Liebert(4D308/Computer room) [Edpact(4D317/Lomputer room) Liebert(4D326/Computer room) Liebert(4D326/Computer room) [Liebert(4D326/Computer room) [Liebert(4D326/Computer room) [Liebert(4D328/Computer room) [Liebert(4D328/Computer room) [Liebert(4D326/Computer room) [Liebert(4C405/Computer room) [Liebert(4C405/Computer room) [Liebert(4C405/Computer room) [Liebert(4C405/Computer room) [Liebert(4C405/Computer room) [Liebert(4C405/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 offices/corridors I-C/D200 offices/corridors I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas	8,000 5,650 8,400 4,650 4,650 5,135 17,600 8,400 8,400 8,400 4,650	0 0 0 0 0 0 0 925 0 0 0	15 15 15 1 1 1 23 05 15 15	07 2 3 15 15 15 5 5 15 3	15	0 0 0 0 0 0 0 0 0 56 264 0		
167 168 169 170 171 172 173 174 175 176 177 177 178 179 180 181 182 183 184	FC-1(40) AHUR-4 FC-1(88)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC	Irlane C.C. (On roof shove 4C/D300 Area) unknown(40 in 4C/D200 area) Liebert(4D308/Computer room) Edpac(4D317/Computer room) Liebert(4D324/Computer room) Liebert(4D324/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4C405/Computer room)	I-C/D200 permeter area; I-C/D200 permeter area; I-C/D201 permeter area; I-C/D200 permeter are	8,000 5,550 8,400 8,400 4,650 4,650 4,650 5,135 17,600 8,400 8,400 8,400 4,650 8,400	0 0 0 0 0 0 0 0 925 0 0 0	15 15 15 1 1 1 23 05 15 15 15 15	07 2 3 3 15 15 15 15 3 3 3 15 3 3	15	0 0 0 0 0 0 0 0 56 264 0 0 0		
167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185	FC-1(40) AHUR-4 FC-1(88)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC	Irlane C.C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 Area) [Liebert(4D308/Computer room) [Edpact(4D317/Lomputer room) Liebert(4D326/Computer room) Liebert(4D326/Computer room) Liebert(4D326/Computer room) Liebert(4D326/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4D328/Computer room) Liebert(4D326/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C417/Computer room) Liebert(4C417/Computer room) Liebert(4C417/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200	8 000 5,550 8,400 8,400 4,650 4,650 5,135 17,600 8,400 6,400 4,650 8,400 8,400 8,400 8,400 8,400 8,400 8,400 8,400 8,400	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15 15 15 11 1 1 23 05 15 15 15 15	07 2 3 15 15 15 5 15 5 15 5 15 3 3 15 3 3 3 3	15	0 0 0 0 0 0 0 0 56 264 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186	FC-1(40) AHURA FC-1(88)	AHU-MCA FC Recirc AC	Irlane C.C. (On roof shove 4C/D300 Area) unknown(40 in 4C/D200 area) Liebert(4D308/Computer room) Edpac(4D317/Computer room) Liebert(4D308/Computer room) Liebert(4D328/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C405/Computer room) Liebert(4C417/Computer room) Liebert(4C417/Computer room) Liebert(4C417/Computer room) Liebert(4C417/Computer room)	I-CD200 permeter areas I-CD308 I-CD317 I-CD317 I-CD317 I-CD317 I-CD317 I-CD310 I-CD3100 offices/comdors I-CD300 permeter areas I-CD300 permeter areas I-CC405 I-CC	8 000 5 550 8 400 6 400 4 650 5 135 7 600 8 400 6 400 6 400 4 650 8 400 8 400 4 650 8 400 2 800 2 800	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15 15 15 1 1 1 1 23 05 15 15 15 15 15	07 2 3 3 15 15 15 15 3 3 3 15 15 3 3 15 15 15 15 15 15 15 15 15 15 15 15 15	15	0 0 0 0 0 0 0 0 0 556 264 0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186	FC-1(40) AHU-R-4 FC-1(88)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Reci	Irane C C (Con root above 4C/D300 Area) unknown(40 in 4C/D200 area) jueber(4D308/Computer room) Leber(4D317/Computer room) Leber(4D317/Computer room) Leber(4D328/Computer room) Leber(4C405/Computer room) Leber(4C405/Computer room) Leber(4C417/Computer room) Leber(4C417/Computer room) Leber(4C417/Computer room) Leber(4C417/Computer room) Leber(4C417/Computer room) Leber(4C417/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 I-C/D200 I-C/D200 I-C/D200 I-C/D200 permeter areas I-C/D300 permeter areas I-C/D300 permeter areas I-C/D300 permeter areas I-C/D300 I-C/D300 permeter areas I-C/D300 I-C/D300 permeter areas	8 000 5 650 8 400 8 400 4 650 4 650 17,600 8 400 8 600 8	0 0 0 0 0 0 0 0 925 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15 15 15 11 1 1 23 05 15 15 15 15 15 15 15 15 15 15 15 15 15	07 2 3 3 15 15 15 5 15 3 3 3 3 1 5 5 5 5 5 5	15	0 0 0 0 0 0 0 0 56 6 6 0 0 0 0 0 0 0 0 0		
167 168 169 170 171 172 173 174 175 176 177 178 180 181 182 183 184 185 185 187	FC-1(40) ANU-R-4 FC-1(88) AHU-R-5 FC-1(44)	AMU-MCA FC Recirc AC Adu-MCA	Irlane C. C. (On roof shove 4C/D300 Area) junknown(40 in 4C/D200 area)	4C/D200 permeter areas 4C9308 4C9317 4D924 400326 400326 400328 4C/0300 othices/comidors 4C/0300 permeter areas 4C405 4C405 4C405 4C405 4C417 4C417 4C417 4C417 4C4019000400 othices/comidors	8,000 9,400 9,400 4,650 4,650 4,650 17,600 8,400 8,400 6,400 6,400 8,400 2,800 4,915 8,400 8	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.5 1.5 1.5 1.5 1.1 1.1 2.3 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	07 2 3 3 15 15 15 15 15 3 3 15 3 15 5 07	15	0 0 0 0 0 0 0 0 55 56 264 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
167 168 169 170 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 186	AHUR4 FC-1(88) AHUR 5 FC-1(44) AHUR 5	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC AHU-MCA AHU-MCA AHU-MCA	Irlane C. C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D300 area) Liteber(4D300 area) Liteber(4D30/Computer room) Liteber(4D30/Computer room) Liteber(4C405/Computer room) Liteber(4C417/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 officeat/corridors I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas	8 000 5 555 9 400 9 400 4 550 4 650 5 135 17 600 8 400 8 400 4 650 8 400 8 600 8 600	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.5 1.5 1.5 1.5 1.1 1.1 2.3 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	07 2 3 3 15 15 15 5 5 3 3 3 15 15 5 5 15 5 5 15 5 5 15 5 5 3 3 3 15 5 5 5	15	0 0 0 0 0 0 0 0 56 264 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
167 168 169 170 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 188 188 188	FC-1(40) ANU-R-4 FC-1(88) AHU-R-5 FC-1(44)	AMU-MCA FC Recirc AC Recir	Irane C. C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) [Lebert(4D308/Computer room) [Edpact(4D317/Lomputer room) [Lebert(4D318/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4D326/Computer room) [Lebert(4C405/Computer room) [Lebert(4C405/Computer room) [Lebert(4C405/Computer room) [Lebert(4C405/Computer room) [Lebert(4C417/Computer room) [Lebe	4C/D200 permeter areas 4C/D308 4C317 4D324 4C326 4C326 4C326 4C328 4C/D300 offices/comidors 4C/D300 permeter areas 4C405 4C405 4C405 4C405 4C405 4C417 4C417 4C73000400 offices/comidors 4C/CA000 permeter areas 4C/D400 permeter areas	8,000 9,400 9,400 4,650 4,650 4,650 17,600 8,400 8,400 6,400 6,400 8,400 2,800 4,915 8,400 8	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.5 1.5 1.5 1.5 1.1 1.1 2.3 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	07 2 3 3 15 15 15 5 5 15 3 3 3 3 15 15 15 15 15 15 15 15 15 15 15 15 15	15	0 0 0 0 0 0 0 0 55 56 264 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
167 168 169 170 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 186	AHU-R-4 FC-1(88) AHU-R-5 FC-1(44) AHU-R-5 FC-1(40)	AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC Recirc AC AHU-MCA FC AHU-MCA AHU-MCA AHU-MCA	Irlane C. C. (On roof above 4C/D300 Area) unknown(40 in 4C/D200 area) liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D308/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D328/Computer room) Liteber(4D300 area) Liteber(4D300 area) Liteber(4D30/Computer room) Liteber(4D30/Computer room) Liteber(4C405/Computer room) Liteber(4C417/Computer room)	I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 officeat/corridors I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas I-C/D200 permeter areas	8 000 5 555 9 400 9 400 4 550 4 650 5 135 17 600 8 400 8 400 4 650 8 400 8 600 8 600	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.5 1.5 1.5 1.5 1.1 1.1 2.3 0.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	07 2 3 3 15 15 15 5 5 3 3 3 15 15 5 5 15 5 5 15 5 5 15 5 5 3 3 3 15 5 5 5	2 3 3 52	0 0 0 0 0 0 0 0 56 264 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1,160	2.970



FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 HVAC SUMMARY (SECOND, THIRD & FOURTH FLOORS)

TABLE 3.4.1.2

flowrate _(cfm)	Est. Airside Data (Ev	reo Fan)	Est Heating Load	Heating Type (Est. Flows/Kw)	Est. C	ooling Load/Comp	ressor	Cooling Type (Est. Cond	Flows/hn)
	· OA TSP	Supp. Fan RA/OA	Heating Re-Heat	Steam MCA-HW Electric	Total	Total Com	Rating	CHW CHW Cond Cond CHW	DX-Cond DX-Cond DX
	(cfm) - (in w q)	(hp) (hp)	(MBH) (MBH)	(lb/hr) (apm) (Kw)	(MBH)	(lons) (hp)		Water(gpm) Water(hp) Water(gpm) Water(hp) Air(hp)	Water(qpm) Water(hp) Air(h
11.800 2,800		5	126	128	160		20 0 99 7 5 1 12		45 Tower 1 Tower
8,230		1 5	36	74	63	5 3	7 5 1 12 5 0.78		15 Tower 1 Tower
10 200	2,100 2	5	209	209	363	20	30 1 12		
B 140			3 73	7.4	225	18 8	20 0.78		
6,252		10	68	1 2		15	20 0 99		
10,667		10	0_		240	::-	30 1 12		60 Tower 2 Tower
15,600		13	234	23	390	32.5	34 0.78		
0	0 0	0	14	2	0				
8,000		7.5	0		180	15	20 099		45 Tower 3 Tower
13 680		15 5	124	12.4	378		33 0.78		
7,0∞	0 05	0 6	105	11	175	14 6	15 0.78		
16,520	2,250 2	75	393	393	360		40 099	72 3 90 Tower 3 Tower 3	
2,600		5,	0 5	51 51	234	15.	20 099	59 2 3	
4,000		3	·		90	7.5	10 0 99		23 Tower 3 Tower
13,000		10	0-	Yes(0)	180		20 0 99	` 	
2,800		15	0		60		7.5 1.12	· · · · · · · · · · · · · · · · · · ·	15 Tower 4 Tower
1,067 7,940		0.5	72	72	219	18 3	3. <u>1 12</u>		6 Tower 4 Tower
16,600		75 3	249	25	415		19 0.78 36 0.78		
5,025				46	139	116	12 0.78		· ·
2,800		5 15	1 3	·	60		5 1 12	·	45 7
2,800			t		60	- 	1 12	······································	15 Tower 4 Tower
8,200		0 7	123	12	205	17.1	18 0.78		15 Tower 4 Tower
4,390		5 15	39	- 	362		32 0.78		EO Toward Javan
2,750		2 15	25	25	76		7 0.78		60 Tower 4 Tower
3,800		03	57		95	7.9	8 0.78		
0.000	0 0		12	7	0			· · · · · · · · · · · · · · · · · · ·	
6,855		75 2	62	6.2	189	15 8	16 0.78		
4,140	555 25	5 15		3.8	114		10 0.76		
8,000	0: 2	5	0		120	10	15 1 12		30 Tower 1 Tower
6,420		7.5 2.5	58	5.8	177		15 0.78		
4,410		75 15	40	4,	122		11 0.78		
3,360		1	0	-	72		10 1 24		
4,650		1.5	0	 			10 1 07		21 Tower 1 Tower
19,000		16	285	29	475	39 6	41 0.78		
12 000			12 45A	456	480	40			
32 000 8 000	3,200 3	30	45"	***************************************	120		50 0.9 3	30 1	
12,820			116	116	334		29 0.78		
7.000	1,925 2 5 0 0 5	06	105	11	175		15 0.78		
25,000		20	356	358	600		60 090	150 6 10	
6,600	990 25	75 25	59	80	182		16 0.78		
16 600	0 05	14	249	25	415		36 0.78		
4,850	0. 1	15	0	<u> </u>	84		10 107		Drycooler 1.5
4,650	0 1	15	0		84		10 107		Drycooler 1.5
8,400	0 1.5	3,	0		120		15 1 12		Drycooler 20
4,650	0 1	15	0		84		10 107		Drycooler 1.5
4,650	0 1	1 5	0		84	7	10 107		Drycooler 1.5
5,650	0, 15	2	0		108	9	15 1 24		Drycooler 15
8,400	0 15	3	0		120		15 1 12		Drycooler 2 0 2
10,200	0 15	5	0	<u> </u>	180		20 099		Drycooler 3.0 3
10,200	0 15	5	0.	 	180		20 099	<u> </u>	Drycooler 3.0 3
8,000	0 05	0.7	120	12.	200	16.7	0.78	liii	· · · · · · · · · · · · · · · · · · ·
6,980 1,785	1,045 23	7 5 3 2 0 0 75	63 16	63	192	16.0	0.78		
3,800	270 25 0 05	20 075 03	57	16	95		4 0.78		<u></u>
3,000	0 0		12	· · · · · · · · · · · · · · · · · · ·	†°ึ¦∙		8 0.78		
16,300		10 .	264	264	500	30	0 099	101 4 127: Tower 1 Tower 1	
25,000		40	0 66		373	E.)	8 0.93	93 4 10	· · · · · · · · · · · · · · · · · · ·
15,000		30	0 31	317	274		7 0 93	56 2 5	
10,000	2,000 5	15	0 229		149		11 0 93	37 1	
10,700	0 3	10	0		180	15	20 0 99	45 2 3	
7,270		75 3	79	7.9	211	17.6	0.78		
5,305	955 23	7 5 2	58	5.8	154	12 8	0.78		
16,600	0 05	14	249	25	415	34.6	6 0.78		
	0. 0.	0,	12	2,	0.				
5 650	0 15	<u>`</u>	0		- 108		1.24		2)Drycoolers 9
5 650 5 650	0 15		0	 	108		5 1 24		
5,650	0 15		0	 	108		5 124		
5,650	0 15		0	 	108		15 124		
5,650	0 15	2	0	1	108		5 - 1 24		
9,300	0 15	5	0	1	180		0 099		
2,800	0 1	1	o .	T	60	5 7			
2,800	0 1		0		60	5 7	5 112		
8,035		10 3	87	8.6	233	10 4	0 0.78		
	0 05	07	120	12	200	16 7	7 0.78		
8,000	0 15	2	0		108		5 124		27 Tower 3 Tower 3
5,650	0 15	3	0	 	120		5 1 12		30 Tower 3 Tower 3
5,650 8,400		3	0	ļ	120		5 1 12		Drycooler 20 2
5,650 8,400 8,400	0 15		0	 	84		0 107		Drycooler 1.5 1
5,650 8,400 8,400 4,650	0 15	1.5		ļ	84		0 107		Drycooler 15 1
5,650 8,400 8,400 4,650 4,650	0 15 0 1 0 1	15	0.		84		0 107		Drycooler 1.5 1
5,650 8,400 8,400 4,650 4,650 4,650	0 15 0 1 0 1	15 15	0	 			3 0.78		
5,650 8,400 8,400 4,650 4,650 4,650 5,135	0 15 0 1 0 1 0 1 925 23		0 56	56	749				
5,650 8,400 8,400 4,650 4,650 4,650 5,135 17,600	0 15 0 1 0 1 0 1 825 23 0 05	15 15 5 15	0 56 264	5.6	149	36.7			
5,650 8,400 8,400 4,650 4,650 4,650 5,135 17,600 8,400	0 15 0 1 0 1 0 1 925 23 0 05 0 15	15 15 5 15 15	0 56 264 0		149 440 120	36.7 3 10 1	5 112		Drycooler 2 0 2
5,650 8,400 9,400 4,650 4,650 4,650 5,135 17,600 8,400 8,400	0 15 0 1 0 1 0 1 925 23 0 05 0 15 0 15	15 15 5 15 15 3	0 56 264 0		149 440 120 120	36.7 3 10 1 10 1	5 1 12 5 1 12		Drycooler 20 2
5,650 8,400 8,400 4,650 4,650 4,650 5,135 17,600 8,400 8,400	0 15 0 1 0 1 0 1 925 23 0 05 0 15 0 15	15 15 5 15 15 3 3	0 56 264 0 0		149 440 120 120 120	36.7 3 10 1 10 1 10 1	5 1 12 5 1 12 5 1 12		Drycooler 2 0 2 Drycooler 2 0 2
5,650 8,400 8,400 4,650 4,650 5,135 17,600 8,400 8,400 4,650	0 15 0 1 0 1 0 1 825 23 0 05 0 05 0 15 0 15	15 15 5 15 15 3 3 3	0 56 264 0 0 0		149 440 120 120 120 84	36.7 3 10 1 10 1 16 1 7 1	5 1 12 5 1 12 5 1 12 0 1 07		Drycooler 2 0 2 Drycooler 2 0 2 Drycooler 1 5 1
5,650 8,400 9,400 4,650 4,650 5,135 17,600 8,400 8,400 8,400 9,500 9,400 9,400 9,500 9	0 15 0 1 0 1 0 1 975 23 0 05 0 15 0 15 0 15 0 15	15 15 5 15 3 3 3 15	0 56 264 0 0 0 0		149 440 120 120 120 64 120	36.7 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10	5 1 12 5 1 12 5 1 12 0 1 07 5 1 12		Drycooler 2 0 2 Drycooler 2 0 2 Drycooler 1 5 1 Drycooler 2 0 2
5,650 8,400 8,400 4,650 4,650 4,650 5,135 17,600 8,400 8,400 4,650 4,650 4,650 8,400 8,500 8,400 8,400 8,400 8,500 8	0 15 0 1 0 1 0 1 925 23 0 05 0 15 0 15 0 15 0 15	15 15 5 15 3 3 3 3 15 3 3	0 56 264 0 0 0 0 0		149 440 120 120 120 120 64 120	36.7 10 12 16 1 7 10 10	5 1 12 5 1 12 5 1 12 0 1 07 5 1 12 5 1 12		Drycooler 2 0 2
5,650 8,400 4,650 4,650 4,650 17,600 8,400 8,400 4,650 8,400 4,650 8,400 4,650 8,400 4,650 8,400 8,500 8,500 8,500 8	0 15 0 1 0 1 0 1 0 1 925 23 0 05 0 15 0 15 0 15 0 15 0 15	1.5 1.5 5 1.5 3 3 3 3 1.5 3 3	0 56 264 0 0 0 0 0 0	26	149 440 120 120 120 120 84 120 120 120	36.7 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10	5 112 5 112 5 117 6 107 5 112 5 112 5 112 5 112		Drycooler 2 0 2 Drycooler 2 0 2 Drycooler 1 5 1 Drycooler 2 0 2 Drycooler 2 0 2
5,650 8,400 9,400 4,650 4,650 4,650 1,650 17,600 8,400 8,400 4,650 4,650 4,650 4,650 4,650 4,650 4,650 4,650 4,650 4,650 4,650 8,400 8	0 15 0 1 0 1 0 1 925 23 0 05 0 15 0 15 0 15 0 15 0 15 0 15 0 15	1.5 1.5 5 1.5 1.5 3 3 1.5 3 3 1.5 3 3 1.5 5 2	0 56 764 0 0 0 0 0 0 0 0	26	149 440 120 120 120 120 84 120 120 50	36.7 10 10 16 17 10 10 10 10 5 7 11.9	5 112 5 112 5 112 0 107 5 112 5 112 5 112 5 112 2 0.78		Drycooler 2 0 2
5,650 8,400 4,650 4,650 4,650 5,135 17,600 8,400 4,650 4,000 4,650 8,400 4,650 8,400 4,650 8,400 4,650 8,400 4,650 8,400 8,500 8,500 8,500 8	0 15 0 1 0 1 0 1 0 1 925 23 0 05 0 15 0 15 0 15 0 15 0 15 0 15 0 15	15 15 5 15 15 3 3 3 15 3 3 15 3 3 15 2 7 7	0 56 264 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	26 54 13	149 440 120 120 120 84 120 120 50 143	36.7 10 12 16 7 10 10 10 10 10 11 10 11 10 11 10 11 10 10	5 112 5 112 5 112 0 107 5 112 5 112 5 112 5 112 6 78 6 0,78		Drycooler 2 0 2
5,650 8,400 4,650 4,650 5,135 17,600 8,400 8	0 1 5 0 1 1	15 15 5 15 15 3 3 3 3 15 3 3 1 5 2 7 0 7	0 56 784 0 0 0 0 0 0 0 0 0 0 0 55 137 137 84	26 54 13 65	149 440 120 120 120 64 120 120 120 120 20 226	36.7 10 10 16 1 10 10 10 10 5 7 11,9 18.3 18.6	5 112 5 112 5 112 0 107 5 112 5 112 5 112 5 112 7 12 2 0.78 9 0.78 0 78		Drycooler 2 0 2
5,650 8,400 4,650 5,135 17,800 8,400 8,400 4,650 8,400 8,400 8,400 4,650 8,400 8	0 15 0 1 0 1 0 1 0 1 975 23 0 05 0 15 0 15 0 15 0 15 0 15 0 15 0 15	15 15 5 15 3 3 3 15 3 3 15 3 3 7 15 9 9 9 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	0 56 764 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	26 54 13 85 6	149 440 120 120 120 84 120 120 60 143 220 226	36.7 10 12 16 7 10 10 10 10 10 11 10 11 10 11 10 11 10 10	5 112 5 112 5 112 0 107 5 112 5 112 5 112 5 112 7 12 2 0.78 9 0.78 0 78		Drycooler 2 0 2
5,650 8,400 4,650 4,650 5,135 17,600 8,400 8	0 15 0 1 1 925 23 0 15 0 15 0 15 0 15 0 15 0 15 0 15 0 1	15 15 5 15 15 3 3 3 3 15 3 3 1 5 2 7 0 7	0 56 784 0 0 0 0 0 0 0 0 0 0 0 55 137 137 84	26 54 13 65 6 7	149 440 120 120 120 120 120 120 64 120 120 120 220 226 100 0	36.7 10 10 16 1 10 10 10 10 5 7 11,9 18.3 18.6	5 112 5 112 5 112 5 112 6 112 5 112 5 112 5 112 2 0.78 9 0.78 9 0.78		Drycooler 2 0 2



CHY	Control Vent Con	4 Elementos)			Cooling Equipment	E	. 7	
Marriago Marriago			Dχ	MCA-CHW				- NVAC
Solidary Company Com					Data/Reference/(Location)			
15 Intern Intern		45 Tower 1			Compressor in MR-21 & tower on roof			94
13 3 1		15 Tower 1	Tower 1		Liebert Unit in 2D106 & tower on roof			95
Company Comp		<u> </u>		46	Plant Chilled Water @ 55 degrees F			96
State 1987	73391	 						97
Solution Description Des		 			Karno Backgood Abilitati cons. on roof			
60 September 10 10 10 10 10 10 10 1		60 Tauri 3	Town 2					
South Description Descri		00 10WE 2	TOWER 2					
19	~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	 						
Fig. September Fig. September Fig. September Fig. September Fig. September Fig. September	45 Tower 3	Tower 3						
10				74	Plant Chilled Water @ 55 degrees F			
20				39	Plant Chilled Water @ 55 degrees F		118	105
22 Deer 2 Deer 2 Person Person 2023 Autone noted 31 7 8 90	72 3 90 Tower 3 Tower 3				Compressor in MR-23 & tower on roof	50 3	37 5	106
15 Sect. Figure 2 Sect. Sec. Sect. Sect. Sect. Sect. Sect. Sect. Sect. Sect.	59 2	<u> </u>						107
15 Source Property Proper		23 Tower 3	Tower 3					108
S. Cont. Tomos Price page (John 1902) 3 5 5 5 5 1		·	3					
## A Proof Charlet Water (2) See Septem 1								
15 Dept De		0 10We1 1	· one		Dient Chilled Water & 66 decrees			
15 Dept. Visited 1999 15 16 17 18 18 18 18 18 18 18		 		91	Plant Chilled Water & 55 degraes F			
15 Speri	~·····································	 						
15 Speet		15 Tower 4	10wer 4					
60 Sear 4 Tener 1. 46 Paint Cheese Vaste (f) 50 Seaper-1 10 10 10 10 10 10 10					Datec Unit in 2C407 & tower on roof	8.5		
Company Comp				45	Plant Chilled Water @ 55 degrees F	18 5	13.6	
22 Self Clarke Yard: 62 5 segard: 4 6 6 6 6 6 6 6 6 6		50 Tower 4	Tower 4	24	PCW @ 55F-Comp in MR25/tower on roof	38 0	28 4	118
10		ļ		45	Plant Chilled Water @ 55 degrees F			
30 Depart Tener	 		21	Plant Chilled Water ED 55 degrees F			120	
35 Ibert Territ 1994 1994 1994 1994 1995 19		 		26	Plant Chilled Water & An decree (
10		 		38	Plant Chilled Water @ 55 degrees 1			
Separation Sep		30 Tower 1	Tower 1		Compressor in 3D114 & tower on more			
24		I		36				
15					Plant Chilled Water @ 55 degrees F			
271 Down! Service Devel Service Devel 11 8 6 32					Trane Unit in 3C141 & condenser on roof			
150 150		21 Tower 1	Tower 1		Liebert Unit in 2C407 & tower on roof	11.5	3.6	
B				105	Plant Chilled Water @ 55 degrees f			
Trans Chaire March 23 A concernation roley 20 15 c 13 c			—— <u>.</u> }-					
19	30			——— I	Trans Chiller in MP23 & condenser on roof			
190				71	Plant Chilled Water @ 55 degrees F			
190 Common Comm	~~~~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			39	Plant Chilled Water (D 55 degrees F			
Disposite 3 15 15 15 15 15 15 15	150 6 10			į.	Climatrol Chiller in MR34 & cond on roof			
Deposite 15 15 15 15 15 15 15 1				37	Plant Chilled Water @ 55 degrees F			
Drycoser 15 15				91}	Plant Chilled Water @ 55 degrees F			
Dycodet 20 23								
Dycopier 15 15 Substitution cond 16 10 14	_ 			<u>-</u>	Liebert(located on roof)			
Dypositr 15 15 superillocated on road 14.5 10.0 14.9 14.5 10.0 14.9 14.5 10.0 14.9 14.5 10.0 14.9 14.5 10.0 14.9 14.5 10.0 14.9 14.5 14.5 10.0 14.9 14.5 14								
Directive 13 1.5 Lustenflocated on reof) 70 1.4 1.4 1.5								
Droposite 2 0 2 23 Luestripocates on nocity 72 3 1 46			15					
Drycoolet 3.0					iebert(located on roof)		16 6	
A plant Chiefe Water © 55 begrees 18 135 147					lebert(located on roof)			
38 Plant Chiled Water @ 50 degrees 27 27 30 148		Drycoole: 3.0	- 30		Hebert (located on roof)			
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56 2 5			—— } -					
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Drycooler 15 15 Luebert(coated on roof) 14.5 10.8 177						14.5		175
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	805 31' 307 0 42	(1)/ 56	105]	2,028		3 280	2 447	1.33

Table 3.4.1.3, Building 2706 Chiller Schedule

Tag #	Mfg.	Rating (tons)	CHW (gpm)	CHW Supply	CHW Return	Cond. (gpm)	Comp. (HP)	Comp. (kW)	Comment
CH-1	Trane	690	1,656	55°F	65°F	2,043	721	538	Rated at .78 kW/ton
CH-2	Trane	690	1,656	55°F	65°F	2,043	721	538	Rated at .78 kW/ton

Table, 3.4.1.4, Buildings 2700/2706 Cooling Towers

Tag#	Mfg.	Equipment Served	Rating (tons)	Cond. (gpm)	Fan (hp)	Comp. (kW)	Comment
CT-1 (2706)	B.A.C.	MCA Chillers	1,380	4,086	4@20	4@14.9	(4) cell, (1) single speed fans
CT-1	Thermal Care	Misc. chillers & DX equip.	200	600	7.5	5.6	fiberglass tower, (1) single speed fan
CT-2	Thermal Care	Misc. chillers & DX equip.	200	600	7.5	.5.6	fiberglass tower, (1) single speed fan
CT-3	B.A.C.	Misc. chillers & DX equip.	210	630	10	7.5	to be replaced w/ Thermal Care unit
CT-4	B.A.C.	Misc. chillers & DX equip.	210	630	10	7.5	to be replaced w/ Thermal Care unit
CT-5	B.A.C.	Misc. chillers & DX equip.					to be removed

Table, 3.4.1.5, Building 2700 & 2706 Primary Pump Schedule

Tag#	Mfg.	Building Service	Flow (gpm)	Head (ft)	Motor (hp)	Motor (kW)	Comment
CHWP-1	Allis-Chalmers	MCA Chilled Water	1,656	172	100	74.6	Building 2706
CHWP-2	Allis-Chalmers	MCA Chilled Water	1,656	172	100	74.6	Building 2706
CHWP-3	Allis-Chalmers	MCA Chilled Water	1,656	172	100	74.6	Building 2706
HWP-1	Allis-Chalmers	MCA Hot Water	455	90	15	11.2	Building 2706
HWP-2	Allis-Chalmers	MCA Hot Water	455	90	15	11.2	Building 2706
HWP-3	Allis-Chalmers	MCA Hot Water	455	90	15	11.2	Building 2706
CWP-1	Allis-Chalmers	Bldg 2706 Tower	2,043	35	25	18.7	Bldg 2706 Cooling Tower pump
CWP-2	Allis-Chalmers	Bldg 2706 Tower	2,043	35	25	18.7	Bldg 2706 Cooling Tower pump
CWP-3	Allis-Chalmers	Bldg 2706 Tower	2,043	35	25	18.7	Bldg 2706 Cooling Tower pump
CT1P-1	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT1P-2	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT2P-1	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT2P-2	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT3P-1	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT3P-2	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT4P-1	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
CT4P-2	PACO	Misc. Chiller & DX equip.	325	110	20	14.9	Bldg 2700 Cooling Tower pump
FWP-1	Aurora	Boiler Feedwater	100	457	25	18.7	Boiler Plant
FWP-2	Aurora	Boiler Feedwater	100	457	25	18.7	Boiler Plant
FWP-3	Worthington	Boiler Feedwater	100	457	25	18.7	Boiler Plant
FWP-4	Ingersoll-Rand	Boiler Feedwater	100	457	25	18.7	Boiler Plant
CP-1	Aurora	Condensate	100	100	5	3.7	Bldg 2700 Main Riser

Tag #	Mfg.	Building Service	Flow (gpm)	Head (ft)	Motor (hp)	Motor (kW)	Comment
CP-2	Aurora	Condensate	100	100	5	3.7	Bldg 2700 Main Riser
CP-7	Aurora	Condensate	100	100	5	3.7	Bldg 2700 Main Riser
CP-8	Aurora	Condensate	100	100	5	3.7	Bldg 2700 Main Riser
CP-1 (New)		Condensate	60	93	6	4.4	Bldg 2706
Misc. Pumps Total		Various			20	14.9	Condensate, domestic hot water, chemical feed, etc.

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 EXHAUST FAN SUMMARY

TABLE 3.4.1.6

	Roof Dwg.	Fan	Field		<u>a</u>	Static P	Energy	Area Served in CFM	Area S	Area Served in CFM		44h Elong	Aron Conved	Connected
Item	Designation	lype	Uata/Reterence	Size	CL 13	1.6.w un	(Jul.)	Dasement	1001			763 6	Doom 4D110	3.02
_	¥	Scrubber	AAF Colag	18" Dia.	3.534	4	0.4			-	 :	3,034	20011 4D 110	202
2	A2	Exhaust	Trane CF13A		1,500	4.0	0.5					1.500	Room 4D110	0 37
	A3	Exhaust	Davion	24"Dia	6.000	9.0	2.0			2.000	2.000	2.000	MR 21, 31, 8 41	1 49
Y		Scribber	AAF	Size 84	7 945	60	20.0					7,945	Room 4D120	14 92
-	2	Scrubber	Drall (Met. Pro) Model NH40		5 600	5.1.	7.5	• -		!	:	5,600	Room 4D120	5 59
	2 3	3 6 6		i	7 860	, c	2.0			2 620	2 620	2,620	East End Toilets	1.49
0	¥ 4	CALIBUSE	Car Mon Model ONAR as		7 045		5.0		-		-	7 945	4D130 - Toxic Gas	3 73
-		Exhaus.	Cal-Initial Michael Civid-33		0 0	10		1	:			4 368	Substation 4	0.75
œ	A12	Exhaust	EV-2	_	4.558	011	0.0		000			200	Apt Floor Andio Allena	2 0
6	A13	Exhaust	EV-7 (2-speed at 18,000 & 9,000 CFM)		18,000	0.75	3.0	-:	18,000			11	1st Floor Audio/visual	7.24
9	A14	Scrubber	Duall (Met-Pro) Model NH36.5		4,200	G	10.0		_		•	4.200	Room 4D130	7.46
-	A15	Scrubber	American Standard Type S	Size 122	3.973	4	5.0			:		3,973	Room 4D108	3.73
12	A17	Exhaust	EV-39	10"×12"	250	9	0.5			250	:		Room 2D134	0 37
-	A18	Scrubber	Duall (Met-Pro) Model NH36.5	:	4.200	9	10.0			4,200			Room 2D134	7 46
;		Exhairet	O CON	12"X15"	1 700	0.4	0.5	:	•	1.700	1		Room 2D129	0 37
2 1		Echara	D 6	*****	200	-	0.1		•	-	'	200	Room 4D130	90 0
2	7	CALIBURA		2 5		-1 -	Ċ				 	200	Boom 4D130	90 0
16	A21	Exhaust	None	3 73	002		5 0		:	-	-	7.00	Boom 40130	1.47
12	A29	Scrubber	Duall (Met-Pro) Model Si10		1.500	4	7.0	:	-			000		- 1
18	A31	Scrubber	Duall (Met-Pro) Model NH36.5		4,200	9	10.0	:	•	4,200	: :		Koom 20202	0.40
- 10	A32	Exhaust	None		200	-	0 2		_	200				CL.0
20	A33	Exhaust	EV-54 (Guess)		6,000	90	2.0			2,000	2.000	2,000	MR 22, 32, 8 42	1.49
2	A34	Exhaust	None	3"Dia	150	-	0.1			1			Room 4D130	0 04
22	ā	Exhaust	None (Not In Service or NIS)	10"×12"	1.500	4.0	0.5						Unknown	0.37
1:0		Typiet	None (NIS)	3"Dia	150	:	0.06	:					Unknown	0 04
316	,	L A LOUGH	15000 CE13		1 200	:	50		***	,	1200		3rd Floor (Guess)	0 37
57	5 1	Extraus	T-1410 CT 13	7	000	-			•			1000	Room 4C204	0 37
97	-	Expansi	I raine O roko	7		- 4	9		•			2000		2.24
26	99	Exhaust	EV-05A		000.7) T	2 6				•	500		0.25
27	78	Expansi	EV-32		000	7 10	20.		•	1))	200 Close	0 75
28	B3	Exhaust	EV-4		2,000	0.5				0006			ביום רוסטי	2 6
29		Exhaust	EV.31		200	4.	0.33					200	4th Floor	0 23
8	B10	Exhaust	EV-66		2.000	3.5	ຕ.			2000			Znd Floor	7 24
5	B11	Exhaust	EV-67		1,000	5	0.5	:		1000			Znd Floor	25.0
32		Exhaust	EV-26		2,000	2	2			2000			2nd Floor	94.1
33		Exhaust	EV-67A (NIS)	i	1,000	1.5	0.5			NIS	-		2nd Floor	03/
34	i	Exhaust	EV-99 (NIS)				1	:		SI.	1		2nd Floor	000
100	B15	Exhaust	EV-20		200	4.4	0.33				200		3rd Floor	0.25
36		Exhaust	Trane CUBA-163 (NIS)		3,178	2	2		•				Unknown	1 49
37	:	Exhaust	Trane CUBA-163 (NIS)		3,178	2	2			i			Unknown	1.49
2	ı	Exhaust	Trane CUBA-163 (NIS)	!	3,178	2	2						Unknown	1.49
5	820	Exhaust	EV-23 (NIS)	! -	200	1.4	0.33		=	NIS			2nd Floor	0.25
3:5	;	200	EV-25		1500	7.5	3		-	1500			2nd Floor	2 24
7		Tyhoust thyhoust	EV-22 (NIS)		3 000	2.7			-	SIS			2nd Floor	1 49
- ;		2000	EV 103		000	:	0.00		-	1000			2nd Floor	0 37
4.	629	Exhaust	77.103		2005	0.75	0.25		•	500			2nd Floor	0 19
2	1	LAIlausi	TV 04 (AIIS)		000	-	5 0		•			NIS	4th Floor	0.37
4	673	LXIIaUS	EV-04 (NES)		2				-		•		Unknown	00 0
45		Exilansi	((413)		_			_	•				<u> </u>	((

1 4 9 1 4 9 1 4 9 2 2 4 1 4 9 1 6 9	0 19 0 37 0 00 0 00 0 37	0.37 0.05 0.56 1.49 0.37 0.75	0 19 0 15 0 56 0 00 0 00 0 00 0 00 0 00 0 05 0 05	0 75 0 0 75 0 0 37 1 53 0 19 0 0 4 0 19 0 19 0 19 0 19	105
Unknown Unknown Unknown 2nd Floor 2nd Floor 2nd Floor	2nd Floor 4nd Floor Unknown Unknown 2nd Floor 2nd Floor MR 23, 33, & 43	1st Floor 2nd Floor 2nd Floor Room 2D202 1st Floor 1st Floor 2nd Floor	Unknown 3rd Floor 4D336 3rd Floor Unknown Unknown Unknown 11 Floor 3rd Floor 4th Floor	3rd Floor (Guess) 4D336 1Unknown 1st Floor (Guess) 3rd Floor (Guess) MR-12 Substation #3 Kitchen exhaust system Substation #7 Substation #7 Substation #7	62,185 Running CFM Total = 185,975
	NIS 1500		6600	ω Σ	62,185
	1500		1,500 800	NIS 4,000	19,120
NIS 1500 NIS	500 300 1500	3,000 3,000 NIS			36,520
		NS NS 1000 2000 2000 2000 2000 2000 2000 200	SE	1000 825 825 300 5,300	27,450
		Ž . Ž	1500	27,200 6,000 6,000	40,700
0.3222	0.55		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	140
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1.2	0.7.1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	10 F0	13.00	
3.178 3.178 3.178 500 1,500 1,000	300 300	1,000 1,000 1,000 1,000 1,000 1,000	66 66 60 60 60 60 60 60 60 60 60 60 60 6	3,000 1,000	211,909
	Dia		6" X8 6" X6" BIB 122L Size 490 6" x10" 12" x15" 17" y18"		- 5
	Q.			(9 %	
Trane CUBA-163 (NIS) Trane CUBA-163 (NIS) Trane CUBA-163 (NIS) EV-23 (NIS) EV-22 (NIS) EV-103	(NIS) (NIS) Juit A	EV-101 EV-108 Duall (Met-Pro) EV-89 (NIS) EV-88 EV-108A (NIS)	None (NIS) EV-125 RF-1 (American) None (NIS or Dead Unit ?) None (NIS or Dead Unit ?) Dead Unit EV-73 EV-73 RF-2 RF-2 None (NIS)	RF-4 (NIS) Dead Unit EV-101 None (NIS) EV-57 (Located in MR-12) EV-58 (Located in Substation #3) EV-86 (Located in Substation #3) EV-86 (Located in Substation #7) EV-86 (Located in Substation #7) EV-98 (Located in Substation #7)	
Trane CUB. Trane CUB. Trane CUB. EV-23 (NIS) EV-25 EV-25 EV-25 EV-103	EV-102 EV-84 (NIS) EV-100 (NIS) Dead Unit EV-25A EV-127	EV. 10 EV. 10 Duall (Met.P EV. 96 EV. 96 EV. 96 EV. 96 EV. 96	None (NIS) EV-125 RF-1 (Amer None (NIS of New York B Dead Unit EV-73 (NIS) RF-2 (NIS) None (NIS)	RF-4 (NIS) Dead Unit EV-101 None None None EV-57 (Loo EV-58 (Loo EV-58 (Loo EV-98 (Loo	
Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust	Exhaust Exhaust Exhaust Exhaust Exhaust	Exhaust Exhaust Scrubber Exhaust Exhaust Exhaust	Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust	Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust Exhaust	
B17 B18 B19 B20 B21 B21 B23	B24 B26 B28 B33 C2		E110 E110 E110 E110 E120 E220 E230 E230 E230 E230 E230 E230 E2	8. 8. 7. 6. 6. 6. 7. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	Totals
35 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	7 7 7 7 7 7 7 7 8 8 7 7 7 7 8 8 7 7 7 7	

Table 3.4.1.7, Building 2700 Miscellaneous Process Cooling & Support System Equipment

		,	, <u> </u>			,
Tag #	Mfg.	Service	Rating (tons)	Motor (hp)	Motor (kW)	Comments
		Cafeteria Coolers (4)	4.0	5.0	3.7	Estimated
		Cafeteria Refrigerator	1.5	2.0	1.5	Estimated
		Cafeteria Refrigerator	0.5	1.0	0.75	Estimated
		Cafeteria Freezer	1.0	1.5	1.2	Estimated
	Edwards	Process Chiller	11.0	15.0	11.2	Located on roof (100 sec)

3.5 Miscellaneous Buildings

Steam produced by the Building 2700 boiler plant is also utilized within Buildings 2704, 2705, and 2715.

Building 2704 is a 7,100 square foot research and development facility built in 1963. The original building HVAC systems included multiple HVAC units serving test rooms, laboratories and support areas. The facility was renovated in 1974. Renovations included interior partition alterations, addition of a mechanical equipment room and alterations to the HVAC system.

Building cooling requirements incorporated single packaged, water cooled DX type cooling equipment with cooling towers located outdoors on the roof. Building heating requirements utilize steam as the primary heat source. Steam produced in Building 2700 is conveyed to Building 2704 via an underground pipe conduit system. Condensate return pumps in Building 2704 pump condensate back to Building 2700 thru the same underground conduit system. Steam pressure entering the building is approximately 80 psig, and is reduced through a pressure reducing station to meet individual building equipment requirements. Steam is utilized for building heat and outdoor air preheat requirements. Both space unit heaters and a steam coil in one air handler are utilized. Original building design included a steam to water heat exchanger providing hot water to finned tube radiation for perimeter space heating. Subsequent renovations included the relocation of the heat exchangers, the condensate receiver, and the electric water heater, which is used for domestic hot water. A valved cross-connection between the heating water and the electric water heater exists for unknown reasons. All original air handlers and a few of the unit heaters were removed and replaced with one large unit capable of heating and cooling.

Advancing technology has necessitated changes in the test room HVAC equipment. Today's test chambers have independent integral systems which utilize few basic building utilities.

Building 2705 is a 47,592 square foot research and development facility built in 1972. No major renovation projects have occurred in this building. The original HVAC equipment and design concepts remain functional as constructed in 1972.

The building HVAC systems are constant temperature, constant volume supply air, with duct mounted terminal hot water reheat coils providing specific zone temperature control. Three (3) main HVAC units, located in the mechanical equipment room, supply air to the building. Associated return air fans either discharge air directly to the outdoors or to a common return air plenum prior to reintroduction into the HVAC units. Steam unit heaters are used to preheat outdoor air within the common return air/outdoor air plenum. Building cooling requirements are satisfied by two (2) air cooled water chillers located outdoors. Chilled water is pumped to the HVAC units and the chillers by pumps located within the mechanical equipment room.

As is the situation in Building 2704, steam produced in Building 2700 is utilized as the heat source for Building 2705 and to satisfy building outdoor air preheat requirements. Steam supply pressure is reduced within Building 2705

and utilized for outdoor air preheat coils and as the primary heat source for the building heating system steam to water heat exchanger. Hot water produced within this heat exchanger is pumped throughout the building to terminal reheat coils, miscellaneous space heating equipment, and to Building 2715 where hot water is the building heat source. Condensate pumps located within the mechanical equipment room pump condensate back to Building 2700 via the underground pipe conduit system. Domestic potable hot water needs are satisfied by electric water heaters. Presently this building is being evaluated as a possible candidate for a new geo-thermal heat pump system. Entech will not evaluate this option as part of this study.

Building 2715, built in 1988, is a 3,000 square foot warehouse facility associated with Building 2705. Hot water produced by the steam to water heat exchanger located within Building 2705 is pumped to this building thru underground piping conduits. Hot water unit heaters satisfy the open warehouse heating requirements while a duct mounted heating coil heats an office area. Air conditioning needs for the office area are satisfied by a split system DX cooling unit. An electric water heater is used for domestic hot water.

3.6 Domestic Hot Water (Building 2700)

Building 2700's domestic hot water is supplied from three (3) storage water heaters manufactured by Patterson-Kelley, Co. and located in the mechanical equipment room in the basement level next to the existing boilers. Steam is utilized as the heat source for the steam to water heat exchangers located within each storage tank. Each storage tank has a nominal storage capacity of 1,000

gallons, for a total nominal storage capacity of 3,000 gallons. Each water heater is capable of a nominal recovery rate of approximately 1,000 gallons per hour at a 100°F temperature rise. Domestic hot water circulation pumps maintain flow of hot water within the piping system. The number of circulation pumps was not verified by Entech. The pumps will be assumed to be maintained and operating. The horsepower requirements for these pumps were lumped together with other miscellaneous pumping estimated to be in Building 2700.

Domestic hot water for the building is used for restrooms and general cleaning needs. The original building system also served locker rooms and the Cafeteria/Kitchen. The Cafeteria/Kitchen facility utilizes independent water heating equipment to satisfy water heating requirements.

Note: Presently the building domestic hot water system is inoperable. Building personnel stated that the circulation pumps had recently failed and have not been replaced, and all three (3) storage water heaters are out of service with failed heat exchangers.

3.7 Controls (Building 2700)

Many of Building 2700 control systems were renovated during the 1982 MCA project. In general, building control systems are by the Barber Coleman Control Co., specialty areas such as cleanrooms have independent dedicated control systems. General building controls are local in nature with individual control panels located in close proximity with their respective HVAC equipment. Local control for MCA air handlers includes seven (7) day time clocks and space mounted temperature sensors. Less than half of the systems

are utilizing the clocks. The majority of the air handlers excluding the MCA units and the cleanroom units are assumed to be operating without timing devices being set and/or installed.

Building 2700 has a central Energy Management Control System (EMCS) used for limited monitoring only. The system is obsolete and for the most part unused or inoperable. Consideration for incorporating the majority of the HVAC systems in the building into an EMCS is beyond the scope of this study.

3.8 Food Preparation (Building 2700)

Meals: According to Cafeteria/Kitchen personnel, approximately 600 meals are prepared daily. The facility prepares breakfast and lunch five days a week. The cafeteria is open from 0630 hours to 1330 hours.

Equipment: The facility employs a mix of electric, gas and steam cooking appliances. Most of the larger appliances are gas-fired while the smaller convenience equipment is electrically operated. The following table lists the major cafeteria/kitchen appliances installed at this facility.

Table 3.8.1, Major Kitchen Appliances

Туре	Quantity	Туре
Two Compartment Fryer	2	Gas
Two Section Griddle w/Oven	1	Gas
Two Tier Convection Oven	1	Gas
Six Burner Range w/Oven	1	Gas
Two Compartment Steamer	1	Steam
Steam Kettle	1	Steam
Steam Table	1	Steam
Food Warmer	1	Electric
Walk-in Cooler	4	Electric
Walk-in Freezer	1	Electric
Single Door Refrigerator	1	Electric
Three Door Refrigerator	1	Electric
Ice Maker	1	Electric
Dishwasher	1	Electric/Steam

Domestic hot water needs for the cafeteria are satisfied by a gas fired water heater manufactured by the Rheem Manufacturing Co.. The water heater has a 91 gallon storage capacity and a recovery rate of 296 gallons per hour at a 100°F temperature rise. The dishwashing unit utilizes building steam directly injected into the wash water for the wash cycle and a steam booster heater is used for the rinse water to meet code dishwashing water temperature requirements.

3.9 Electrical (Building 2700)

<u>Service:</u> Power is supplied to Fort Monmouth by The Jersey Central Power and Light Company (JCP&L). JCP&L supplies centrally located substations, which are the property of the Government, with 34.5 kV delta underground feeders. Fort Monmouth is served under JCP&L's General Transmission Rate.

Transformers: Fort Monmouth's main substations transform JCP&L's 34.5 kV feeds to a Fort Monmouth underground distribution system at 12.5 kV. Building 2700 is serviced by the Hope Road/Charles Wood Area distribution system. Outside of Building 2700, two (2) 10,000 kVA unit substation transformers reduce the 12.5 kV distribution feed to 4160V. One (1) of these transformers is redundant and is used as a backup building feed in the event of an emergency. Within Building 2700 is a 4160V building distribution system which feeds seven (7) individual substation transformers located throughout the building. These individual transformers in turn provide secondary building distribution at 480V/277V, 3 phase, 60 Hz and 208V/120V, 3 phase, 60 Hz. The 480 volt distribution is provided to satisfy large equipment requirements. The 208 volt distribution is primarily used for building lighting systems, smaller equipment loads, and building receptacles.

Emergency Power: Building 2700 emergency power consists of two (2) 150 kW generators sets, one (1) 480 volt, 3 phase and one (1) 208 volt, 3 phase. The generator sets are located in the vicinity of the building primary switch gear on the basement floor level. The generator sets are fired with diesel fuel, a day tank located in an adjacent space stores fuel for generator use. A power monitor

located within an automatic transfer switch activates the generator set and switches the emergency power source to the building emergency equipment.

<u>Lighting:</u> In general, lighting systems for Building 2700 are predominately fluorescent type. Light fixtures vary in size and style utilizing 40 watt fluorescent lamps as the light source. Estimates in watts/sq ft are made for the various types of areas identified in Section 5.

3.10 Gas Service

Natural gas is supplied by the New Jersey Natural Gas Company of Wall, New Jersey. The service to Building 2700 was recently upgraded to meet the requirements for heating the building. The new service to Building 2700 is a 4" line branched from a new 6" header which was routed from the Hope Road main. In addition to the 4" branch, there are two (2) 2" lines to other buildings off the 6" header.

Other natural gas uses in Building 2700 include kitchen use for cooking, as a heat source for the second floor dry room de-humidification air handler located on the roof, and possibly for minor lab uses. The location of the meter is outside near the intersection of the 300 and 400 areas on the west side of Building 2700.

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4.0 BILLING HISTORIES

4.1 General

For the most part, the energy analysis for this report is based upon data acquired for a 12-month period from the Spring 1994 through Spring 1995.

Inconsistencies in available data beyond the Spring 1995 limited the history data for electricity and fuel oil deliveries to one (1) year. Gas billing and usage data was not provided except for enough information to determine an incremental rate.

Currently, Building 2700 is not individually metered for electricity. Electricity for Building 2700 is provided by the Hope Road/Charles Wood Area distribution system. This system also supports other buildings that include 2704, 2705, 2525, 2537, 2539, 2543, and 2566. Also connected to this distribution system are large residential areas of housing units and barracks. Utility support equipment for the Hope Road/Charles Wood Area is also connected to this service including street lights. Based on the size and type of the buildings, etc. connected to this service, it appears that Building 2700 will account for 50% or more of the total costs. Refer to Section 5.6.3.1 for more details.

Natural gas is metered at Building 2700 while No. 2 fuel oil is delivered on a monthly basis and consumption is tracked by boiler plant personnel on a daily/monthly basis. Steam production data was available for two (2) years and is documented in this section.

history for the Hope Road/Charles Wood Area which will be used as a guideline for estimating electrical energy costs. The estimated annual energy costs for Building 2700 will be estimated in Section 5 of this report for use in evaluating the ECOs in Section 6.

4.2 Electricity

Jersey Central Power & Light Company (JCP&L) provides power to Hope Road/Charles Wood Area under the GT (General Service Transmission) Rate. This rate is available to customers taking service at the transmission voltage of 34.5 kV. Table 4.2.1 on the following page displays the electric billing history of the Hope Road/Charles Wood Area distribution system for the year of May 1994 through April 1995. A copy of the electric bills are included in Appendix 8.2.

Note: The off-peak demands shown are provided by the electric company for information only with no impact to the costs. The associated off-peak reactive demand charge and variations in the electric rates from month to month affect the overall costs by about 2%. Refer to Section 4.3 for details about the determination of incremental rates for this study.

Table 4.2.1
Hope Rd./Charles Wood Area - Electric Billing History
May 1994- April 1995
JCP&L Rate - General Transmission

Month	Days	On-Peak Demand (kW)	Off-Peak Demand (kW)	Reactive Demand (kW)	On-Peak (kWh)	Off-Peak (kWh)	Total (kWh)	Cost (\$)	Rate (\$/kWh)	Usage (kWh/Day)	Energy (mmBtu)
May 1994	29	4,957	4,147	2,992	000,066	1,314,000	2,304,000	\$191,679	\$0.083	79,448	2,138
June	29	6,977	5,926	3,881	1,368,000	1,845,000	3,213,000	\$273,851	\$0.085	110,793	10,966
July	33	7,020	5,929	3,960	1,629,000	2,403,000	4,032,000	\$326,336	\$0.081	122,182	13,761
August	29	6,757	5,598	3,823	1,305,000	1,854,000	3,159,000	\$267,918	\$0.085	108,931	10,782
September	30	5,623	4,856	3,092	1,233,000	1,656,000	2,889,000	\$240,127	\$0.083	96,300	9,860
October	29	4,482	4,414	2,279	981,000	1,386,000	2,367,000	\$191,153	\$0.081	81,621	2,490
November	33	4,865	4,367	2,786	1,116,000	1,566,000	2,682,000	\$214,912	\$0.080	81,273	9,154
December	29	4,738	4,289	2,685	996,300	1,359,000	2,355,300	\$192,896	\$0.082	81,217	8,039
January 1995	31	4,726	4,247	2,491	1,008,000	1,521,000	2,529,000	\$203,030	\$0.080	81,581	8,631
February	30	4,692	4,296	2,480	1,044,000	1,422,000	2,466,000	\$199,289	\$0.081	82,200	8,416
March	29	4,678	4,280	2,671	1,003,500	1,358,100	2,361,600	\$192,565	\$0.082	81,434	8,060
April	32	4,701	4,107	2,827	1,031,400	1,485,000	2,516,400	\$202,427	\$0.080	78,638	8,588
Total	363	64,216	56,456	35,967	13,705,200	19,169,100	32,874,300	\$2,696,183	\$0.082	90,563	112,200

4.2.1 Incremental Cost

Entech Engineering developed a Lotus spreadsheet computer program to determine the incremental costs for electricity. Using actual billing data, for both summer and winter month, usage and demand are entered into the program, and the bills are calculated. The computer calculations match the utility's bill.

To calculate the incremental cost for billing demand, the electric bill is re-calculated using one less kW of demand. The cost difference between the actual bill and the bill calculated with one less kW is considered to be the incremental cost for demand (\$/kW).

The same procedure is performed for usage (kWh). The bill is calculated using one less kWh, with the difference in the two costs being the incremental usage cost (\$/kWh). For this facility, the incremental cost for electricity is as follows:

Table 4.2.1.1, Incremental Costs

Incremental	Winter (Oct-April)	Summer (May-Sept)
Demand, \$/kW	\$8.31	\$9.22
Off-Peak, \$/kWh	\$0.06244	\$0.06256
On-Peak, \$/kWh	\$0.07234	\$0.07246

The incremental costs will be used in calculations of the electric model as described in Section 2.

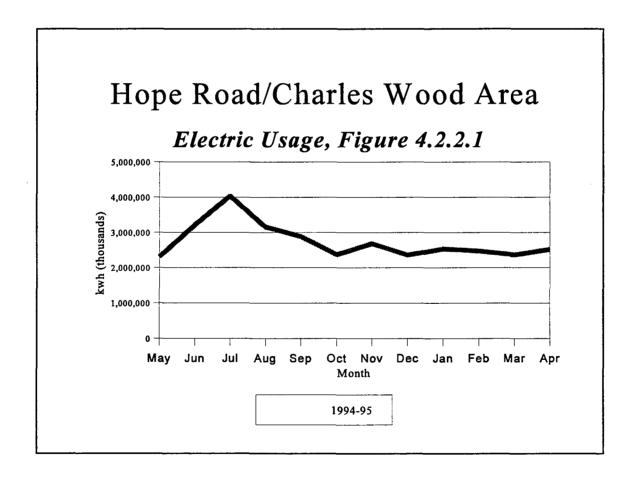
The use of incremental rates is reasonably accurate for calculating cost savings due to small changes ($\pm 25\%$) in demand and usage totals from existing levels. The use of incremental rates is less accurate in calculating cost savings with larger changes in demand and usage (>25%) and tends to underestimate savings slightly (usually < 2%). However, for the convenience of calculating the feasibility of various options, the use of incremental rates for demand and usage is usually accurate and in some cases slightly conservative (savings not over estimated) and is therefore prudent.

Copies of the calculations of the incremental costs, and monthly electric bills are included in the Attachments 8.3. Included in 8.4 is the rate structure used.

4.2.2 Electric Usage

Electric usage is measured in kilowatt hours (kWh). One kWh is equivalent to the usage of 1,000 watts of electricity for one hour. Figure 4.2.2.1 graphically shows electrical usage profile for the Hope Road/ Charles Wood Area distribution system for the period of May 1994 through April 1995.

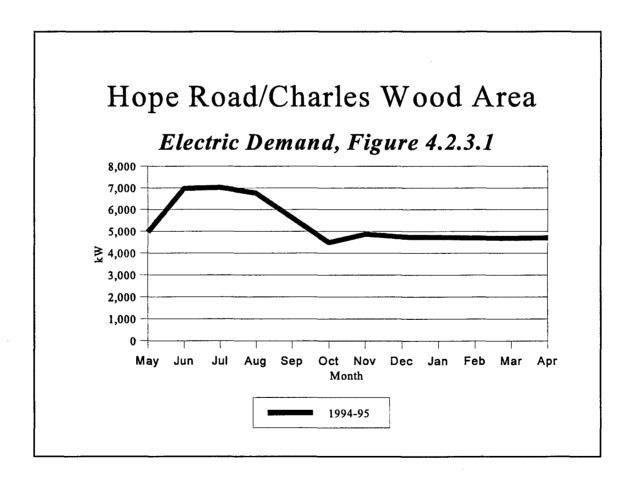
The graph indicates that electric usage follows a cooling curve. This is evident from the increases seen during the summer.



4.2.3 Monthly Demand

Electrical demand is the highest rate of electrical energy used during a specified time interval (normally 15 minutes). The measurement of electric demand is expressed as kilowatts (1,000 watts). Electrical demand is not necessarily related to the amount of time the electrical components are in operation. The monthly billing demand profile the past year is graphically shown in Figure 4.2.3.1.

The billed demand is fairly consistent during the winter months and increases during the warmer months.



4.3 Fuel Oil

Until October of 1995, No. 2 heating fuel oil has been used to fire Building 2700's boilers which supplies steam to Building's 2700, 2704, 2705, 2706 and 2715. Table 4.3.1 shows the fuel oil billing history as delivered to Building 2700, for the year of April 1994 through March 1995. Data available before and after this period is limited. Bills for the months of June and November 1994, were unavailable. Usage values were estimated for these months by averaging the surrounding two (2) months. The costs were estimated to be \$0.74/gal and \$0.59/gal, respectively. The average cost for No. 2 fuel oil throughout the year analyzed was \$0.69/gal or \$4.97/mmBtu.

Table 4.3.1, Building 2700, No. 2 Fuel Oil Billing History April 1994 - March 1995 Premier O&G Supply Co., Inc., Rahway, New Jersey

Month	Delivered (gal)	Actual \$/gal	Actual Cost (\$)	Energy mmBtu
April 1994	43,118	\$0.78	\$33,632	5,980
May	28,964	\$0.74	\$21,433	4,017
June	32,330	\$0.74	\$23,924	4,484
July	35,695	\$0.74	\$26,414	4,951
August	29,251	\$0.78	\$22,816	4,057
September	29,383	\$0.78	\$22,919	4,075
October	43,013	\$0.78	\$33,550	5,965
November	43,684	\$0.59	\$25,774	6,058
December	44,355	\$0.59	\$26,169	6,152
January 1995	45,412	\$0.59	\$26,793	6,298
February	38,037	\$0.59	\$22,442	5,275
March	37,804	\$0.59	\$22,304	5,243
Total	451,046	\$0.69	\$308,171	62,555

Refer to Appendix 8.5 for copies of the fuel oil bills for Building 2700.

The fuel oil delivery totals summarized above are compared to the usage totals taken at the boiler plant. Table 4.3.2 details this comparison and shows that the totals are relatively close for the one (1) year period from April 1994 to March 1995.

The usage totals reflect a total of 8.2% more than the delivered totals.

Personnel at Fort Monmouth state that in addition to the delivered totals, excess fuel oil not used for other buildings was periodically dumped into the Building 2700 storage tank. This helps to explain the usage totals being higher than the delivery totals. The table confirms the validity of using the boiler plant logs for fuel use and subsequently for the adjusted steam production numbers. The yearly costs at \$0.69 per gallon would have been approximately \$334,000 for fuel oil use in the boiler plant for producing steam.

Table 4.3.2, Building 2700 Fuel Oil Comparison April 1994 - March 1995

Month	Delivered (gal)	Usage (gal)	Difference (gal)	Difference %
April 1994	43,118	41,680	(1,438)	(3.3)
May	28,964	38,110	9,146	31.6
June	32,330	29,540	(2,790)	(8.6)
July	35,695	30,540	(5,155)	(14.4)
August	29,251	33,110	3,859	13.2
September	29,383	32,950	3,567	12.1
October	43,013	35,570	(7,443)	(17.3)
November	43,684	40,590	(3,094)	(7.1)
December	44,355	48,230	3,875	8.7
January 1995	45,412	52,190	6,778	14.9
February	38,037	54,920	16,883	44.4
March	37,804	46,990	9,186	24.3
Total	451,046	484,420	33,374	8.2
Average	37,587	40,368	2,781	8.2

Note: Values in parentheses () indicate negative values.

4.4 Natural Gas

In the past, Building 2700 used natural gas for cooking, domestic hot water, and dehumidification during the course of a year. These consumption totals are expected to rise significantly with space heating associated with Boiler #3 coming on-line with natural gas at the end of 1995. Natural Gas is provided by New Jersey Natural Gas Company under Rate Schedule #2 (Firm Service Other Than Residential). The only natural gas bills supplied to Entech were for the months of August through November of 1995. The results show that the

consumption of natural gas by Building 2700 was very low. Table 4.4.1 displays the most recent available natural gas consumption totals.

The results in Table 4.4.1 reflect an average mcf cost of \$8.61. As mentioned, the anticipated gas consumption will rise significantly. Usage totals in the past have been less than 100 mcf/month while future consumption totals are expected to be over 5,000 mcf/month on average. Based on the non-interruptible billing rate structure, Entech has determined the expected cost will be near \$7.50/mcf or \$7.27/mmBtu. This value will be used for calculating gas costs associated with the higher consumption. Information provided by Fort Monmouth personnel establishes the fact that the site will remain on the non-interruptible service for seven (7) years starting in 1995 as part of an agreement related to the gas company absorbing the cost for installing the new main to Building 2700. Interruptible rates beyond the initial seven (7) years should be significantly lower. The agreement is for the entire site usage totals and it includes a maximum demand limitation of 6.2 million therms and 3 million therms of minimum usage without penalty.

Refer to Appendix 8.6 for the gas bills from the fall of 1995, and Appendix 8.7 for the most recent gas billing rate structure documentation.

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Table 4.4.1, Natural Gas Billing History New Jersey Natural Gas August-November 1995

Month	Usage (mcf)	Cost (\$)	\$ per mcf
August *	4.6	\$47.09	\$10.24
September	83.9	\$663.60	\$7.91
October *	69.7	\$553.11	\$7.97
November	22.0	\$184.04	\$8.37
Totals	180	\$1,447.84	\$8.03
* Estimated Bi	ills		Avg. \$/mcf

4.5 Steam Production

The Boiler Plant in Building 2700 provides steam to Buildings 2700, 2704, 2705, 2706, and 2715. Steam production is calculated from the fuel use totals recorded by the boiler plant operators in their daily logs. Table 4.5.1 reflects the steam production as recorded in the logs for a two year period between July 1993 through July 1995 which includes a one month shutdown. Copies of the boiler logs can be reviewed in Appendix 8.8.

The table shows that the method employed by the plant results in fuel to steam efficiencies in the mid 90 percentile range, and has one month over 100% efficiency. Efficiencies for boilers in the 90% range are unrealistic and therefore an adjustment is required. Entech was told by plant personnel that the accuracy of fuel oil consumption is dependable. Therefore the fuel oil totals were used as a basis to establish the adjusted steam production totals. The fuel totals are used in conjunction with optimistic fuel oil to steam efficiencies for these 40 year old boilers. These efficiencies are evaluated to be in the range of 70% to 80% for low to high demands, respectively. The resulting data, shown in Table 4.5.2 reduced boiler log production totals by an average of 20%.

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FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 - STEAM PRODUCTION HISTORY JULY 1993 -JULY 1995 FACILITIES ENGINEERING OPERATING LOG

TABLE 4.5.1

JULY 1993	ULY 1993-JUNE 1994								
	Operating	S	Steam Production		Steam Energy	No. 2 Fuel Oil Usage	Oil Usage	Fuel Oil Energy	Fuel Oil
month	days	mlbs/month	mlbs/day	lbs/hr	mmBtu/mon.	gal/mon.	gal/day	mmBtu/month	eff. (%)
July	28	3,019	108	4,493	3,019	24,040	859	3,334	%5'06
August	31	3,994	129	5,368	3,994	30,450	982	4,223	94.6%
September	30	3,173	901	4,407	3,173	24,130	804	3,347	94.8%
October	31	3,825	123	5,141	3,825	29,170	941	4,046	94.5%
November	29.5	5,232	177	7,390	5,232	39,820	1,350	5,523	94.7%
December	31	7,273	235	9,776	7,273	55,500	1,790	2,698	94.5%
January	31	9,751	315	13,106	9,751	61,140	1,972	8,480	115.0%
February	28	8,355	298	12,433	8,355	63,480	2,267	8,805	94.9%
March	31	7,687	248	10,332	7,687	58,530	1,888	8,118	94.7%
April	30	5,480	183	7,611	5,480	41,680	1,389	5,781	94.8%
May	31	5,005	191	6,727	5,005	38,110	1,229	5,286	94.7%
June	30	3,874	129	5,381	3,874	29,540	985	4,097	94.6%
TOTAL:	361.5	899'99	184	7,684	899'99	495,590	1,371	68,738	97.0%

month days July 31 August 31 September 30 October 31 November 30 January 31 February 28								
h ber		Steam Production		Steam Energy	No. 2 Fuel Oil Usage	Oil Usage	Fuel Oil Energy	Fuel Oil
July 31 August 31 September 30 October 31 November 30 January 31 February 28	mlbs/month	mlbs/day	lbs/hr	mmBtu/month	gal/mon.	gal/day	mmBtu/month	eff. (%)
August 31 September 30 October 31 November 30 January 31 February 28	4,020	130	5,403	4,020	30,540	586	4,236	94.9%
September 30 October 31 November 30 December 31 January 31 February 28	4,353	140	5,851	4,353	33,110	1,068	4,592	94.8%
October 31 November 30 December 31 January 31 February 28	4,352	145	6,044	4,352	32,950	1,098	4,570	95.2%
November 30 December 31 January 31 February 28	4,669	151	6,276	4,669	35,570	1,147	4,934	94.6%
December 31 January 31 February 28	5,286	176	7,342	5,286	40,590	1,353	5,630	93.9%
January 31 February 28	6,177	199	8,302	6,177	48,230	1,556	069'9	92.3%
February 28	6,854	221	9,212	6,854	52,190	1,684	7,239	94.7%
•	3 7,246	259	10,783	7,246	54,920	1,961	7,617	95.1%
March 31	6,183	199	8,310	6,183	46,990	1,516	6,518	94.9%
April 28	4,654	991	6,926	4,654	36,180	1,292	5,018	92.7%
May Plant Down	n N/A	N/A	N/A	N/A	N/A	N/A	N/A	A/N
June 20	2,160	108	4,500	2,160	16,520	826	2,291	94.3%
July 31	3,189	103	4,286	3,189	23,620	762	3,276	97.3%
TOTAL: 353.0	59,143	168	6,981	59,143	451,410	1,279	62,611	94.5%

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FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 - STEAM PRODUCTION HISTORY JULY 1993 -JULY 1995 ADJUSTED STEAM PRODUCTION

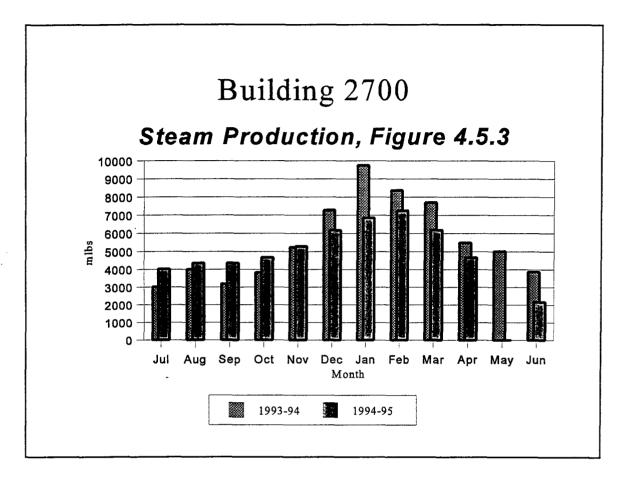
TABLE 4.5.2

JULY 1993-JUNE 1994	NE 1994								
	Operating	No. 2 Fuel Oil	2 Fuel Oil Log Usage	Fuel Oil Energy	Fuel Oil	Adj. Stm. Energy	Adjust	Adjusted Steam Production	tion
month	days	gal/mon.	gal/day	mmBtu/month	est. eff. (%)	mmBtu/mon.	mlbs/month	mlbs/day	lbs/hr
July	28	24,040	859	3,334	70.0%	2,334	2,334	83	3.473
August	31	30,450	982	4,223	20.0%	2,956	2,956	95	3,974
September	30	24,130	804	3,347	70.0%	2,343	2,343	78	3,254
October	31	29,170	941	4,046	70.0%	2,832	2,832	91	3,807
November	29.5	39,820	1,350	5,523	75.0%	4,142	4,142	140	5,851
December	31	55,500	1,790	7,698	%0.08	6,158	6,158	199	8,277
January	31	61,140	1,972	8,480	%0.08	6,784	6,784	219	9,118
February	28	63,480	2,267	8,805	80.0%	7,044	7,044	252	10,482
March	31	58,530	1,888	8,118	%0.08	6,494	6,494	209	8,729
April	30	41,680	1,389	5,781	75.0%	4,336	4,336	145	6,022
May	31	38,110	1,229	5,286	75.0%	3,964	3,964	128	5,328
June	30	29,540	985	4,097	70.0%	2.868	2,868	96	3,983
TOTAL:	361.5	495,590	1,371	68,738	26.0%	52,256	52,256	145	6,023

JULY 1994-JULY 1995	II.Y 1995								
	Operating	No. 2 Fuel Oil	Fuel Oil Log Usage	Fuel Oil Energy	Fuel Oil	Adj. Stm. Energy	Adjus	Adjusted Steam Production	tion
month	days	gal/mon.	gal/day	mmBtu/month	est. eff. (%)	mmBtu/month	mlbs/month	mlbs/day	lbs/hr
July	3.	30,540	586		70.0%	2,965	2,965	96	3.985
August	31	33,110	1,068	4,592	70.0%	3,215		104	4.321
September	30	32,950	1,098		70.0%	3,199	3,199	107	4,443
October	31	35,570	1,147	_	75.0%	3,700	3,700	119	4.973
November	30	40,590	1,353		75.0%	4,222	4,222	141	5.864
December	31	48,230	1,556		80.0%	5,352	5,352	173	7,193
January	31	52,190	1,684	7,239	80.0%	5,791	5,791	187	7.784
February	28	54,920	1,961	7,617	80.0%	6,094	6,094	218	9,068
March	31	46,990	1,516		%0.08	5,214	5,214	168	7,008
April	28	36,180	1,292	5,018	75.0%	3,764	3,764	134	5,601
May	Plant Down	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
June	20	16,520	826	2,291	70.0%	1,604	1.604	80	3.342
July	31	23,620	762	3,276	70.0%	2,293	2,293	74	3.082
TOTAL:	353.0	451,410	1,279	62,611	75.7%	47,413	47,413	134	5.596

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Figure 4.5.3 reflects the production by month for the comparative years of the adjusted steam production values.



The following Table 4.5.4 is a summary of the two years of data in Table 4.5.2 from an mlbs/day and an lbs/hr standpoint. Average values from these tables will be used in establishing a steam model of the yearly production.

The actual operating efficiencies for these boilers may be as low as 60-65%. The approach used here was to establish steam production from fuel use totals making sure to have enough steam available for analysis. If estimates for efficiencies are too low, then separating the uses could become tedious with only minor (or no) losses to go around. Estimates on the high side allow for energy losses from inefficiencies to be counted in with the steam production

losses. In either case, the wasted fuel is accounted for whether it is included in the generation or distribution of steam.

The addition of a new dual fuel burner assembly to one of these forty year old boilers can only be expected to increase the overall fuel to steam efficiencies of that boiler by 2% (± 1%). The majority of the losses associated with these boilers remains in their inefficient geometry, loose construction, etc., leading to poor heat transfer and high excess air. Since, No. 2 oil is typically 2% better in efficiency than natural gas, the same efficiency values were maintained in going from No. 2 oil use with the older burner to natural gas with new burners. The delineation between boiler losses and system losses is irrelevant in establishing existing costs for oil or gas versus future costs with new equipment.

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Table 4.5.4, Building 2700 Steam Consumption Rate

Month	Day	1993-	1994	1994-	1995		Average	e :
		mlbs/day	lbs/hr	mlbs/day	lbs/hr	mlbs/day	lbs/hr	mlbs/month
July	31	83	3,473	96	3,985	90	3,729	2,775
August	31	95	3,974	104	4,321	100	4,148	3,085
September	30	78	3,254	107	4,443	93	3,849	2,775
October	31	91	3,807	119	4,973	105	4,390	3,255
November	30	140	5,851	141	5,864	141	5,858	4,215
December	31	199	8,277	173	7,193	186	7,735	5,766
January	31	219	9,118	187	7,784	203	8,451	6,293
February	28	252	10,482	218	9,068	235	9,775	6,580
March	31	209	8,729	168	7,008	189	7,869	5,844
April	30	145	6,022	134	5,601	140	5,812	4,185
May	31	128	5,328	108	4,500	118	4,914	3,658
June	30	96	3,983	80	3,342	88	3,663	2,640
Total	365	1,735	arr 448	1,635		1,685		51,071
Average	30.4	144.6	6,024.8	136.3	5,673.5	140	5,849	4,256

The values in Table 4.5.4 relate directly to the daily and hourly production totals summarized in Table 4.5.2. Yearly values were then calculated assuming typical monthly day totals or 365 days per year. May 1994-1995 was estimated. July 1994-1995 shown previously to constitute a year of data was omitted for clarity.

The average values shown in Table 4.5.4 will be used as a basis for the Steam Model in Section 5 and for ECOs in Section 6.

4.6 Estimated Steam Costs Using Natural Gas

Since natural gas will be the primary source (99%+) of fuel for making steam in Building 2700, we must now convert past steam production tables from fuel oil based totals to natural gas based totals.

Using the average mlbs/month and assuming that the new gas train on Boiler #3 operates at the corresponding monthly efficiencies identified previously, we can now produce reference usage and cost totals for steam production using natural gas.

Table 4.6.1 documents the estimated natural gas costs based on \$7.50/mcf for the average steam production for the last two years. Gas consumption for steam production is approximately 69,210 mcf/year. The estimated cost for using natural gas to produce steam in the existing boiler plant is about \$519,000. For the equivalent amount of steam using No. 2 fuel oil at the same efficiencies the cost would have been about \$334,000. Therefore, from this evaluation the first year cost increase for the site using gas over oil in the Building 2700 central boiler plant can be expected to be about \$175,000.

Table 4.6.1, Building 2700
Estimated Natural Gas Costs for Steam Production

Month	Day	2-yr Sto	am Flow	Average	Steam	Boiler	Natural Gas	Natural	Cost
		mlbs/day	lbs/hr	mlbs/mo.	Energy mmBtu/mo.	eff.	Energy mmBtu/mo.	Gas mcf/mo.	\$/mo.
July	31	90	3,729	2,775	2,775	.70	3,964	4,087	\$30,652
August	31	100	4,148	3,085	3,085	.70	4,407	4,544	\$34,077
September	30	93	3,849	2,775	2,775	.70	3,964	4,087	\$30,652
October	31	105	4,390	3,255	3,255	.75	4,340	4,475	\$33,559
November	30	141	5,858	4,215	4,215	.75	5,620	5,794	\$43,457
December	31	186	7,735	5,766	5,766	.80	7,208	7,431	\$55,736
January	31	203	8,451	6,293	6,293	.80	7,866	8,110	\$60,824
February	28	235	9,775	6,580	6,580	.80	8,225	8,480	\$63,600
March	31	189	7,869	5,844	5,844	.80	7,305	7,531	\$56,486
April	30	140	5,812	4,185	4,185	.75	5,580	5,753	\$43,147
May	31	118	4,914	3,658	3,658	.75	4,877	5,028	\$37,711
June	30	88	3,663	2,640	2,640	.70	3,771	3,888	\$29,159
Total	365	1,688		51,071	51,071		67,127	69,208	\$519,060
Average	30	141	5,849	4,256	4,256	0.76	5,594	5,767	\$43,255

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5.0 ENERGY MODELS

5.1 General

Measured data regarding steam production and energy consumption and costs (gas, oil and electricity) for Building 2700 and it's boiler plant were presented in Section 4, Billing History, of this study. In this section of the report Entech examines how the steam produced and energy consumed are utilized. Before evaluating ECOs it is essential to understand the energy consumption patterns and how each type of energy user contributes to the overall building energy use and cost. As described in Section 2, Methodology, the analyses include the steam use model which is a summary of the six individual models, the fuel use model and the electric model. The main computer models as described in Section 2.5 are as follows:

- 1. Steam Use Model
- 2. Heat Gain Model (Degree Day Method)
- 3. Heat Gain / Loss Model (EZDOE Method)
- 4. Electric Model

Throughout this section references will be made to winter, intermediate and summer months. Since the MCA 2-pipe system runs from May 15 to October 15 for cooling and vice-versa for heating, some adjustments will be made where applicable.

Winter December, January, <u>February</u>, March Intermediate October, <u>November</u>, <u>April</u>, May Summer June, July, August, September

Note: The underlined months relate to expectations for uses associated with the winter peak month, and the typical intermediate and summer months. Prorating

will be used in the other months when balancing the results of the steam model at the end of Section 5.2

5.2 Steam Use Model

The Steam Use Model investigates space heating, reheat, domestic hot water, cafeteria use, boiler plant steam use, and distribution losses which constitute the steam produced at the boiler plant in Building 2700. For purposes of ECO evaluation, we will present totals that include or omit the MCA related heating loads.

5.2.1 Space Heating

The boiler plant in Building 2700 provides steam for space heating associated with Building's 2700, 2704, 2705, 2706 and 2715. From the equipment summary tables, Table 3.4.1.1 and 3.4.1.2, the estimated connected loads for heating Building 2700 and 2706 are as follows:

Building 2700 and 2706

1. MCA Hot Water	6,250 MBH (lbs/hr of steam)
2. Misc. Steam Heating	650 MBH (lbs/hr of steam)
3. AHU's w/ Steam Heat	
and Misc. Cooling	3,500 MBH (lbs/hr of steam)
Total Connected Load (w/MCA)	10,400 MBH (lbs/hr of steam)
Total Connected Load (w/o MCA)	4,150 MBH (lbs/hr of steam)

Based on experience and guidance from EZDOE results presented later in this section, Entech estimates the following average demand requirements for each of these. During the peak heating month of the year, February, the MCA Hot Water average demands are estimated to

be at about 20-33% (day vs night) of the connected load and 7-12% during the intermediate months of November and April. The corresponding percentages for the Miscellaneous Steam units during this period are 17-25%, and 5-10% respectively. The heating system for MCA is turned off from mid-May through mid-October, while the miscellaneous users during this period are considered to be minimal, 4-8%, and limited to cool mornings in areas frequently open to outdoors such as loading docks, stair tower doors on first floor, etc.

With the exception of the cleanroom, minimal heating is expected during the year for areas supported by the air handlers utilizing steam. Areas supported by the majority of these units have high internal heat gains and cooling is expected year-round. During the peak heating month the usage for these air handlers is estimated to be only about 6-12% of the connected load. Intermediate months at 2-4% and 0% for the summer months. The cleanroom units requiring re-heat (steam all year) are not included in this sub-section. Refer to Section 5.2.2 for reheat requirements for the cleanrooms in Building 2700 and for areas in Building 2705.

From the design drawings it was determined that the connected heating loads for Buildings 2704, 2705 and 2715 are as follows:

<u>Bu</u>	<u>ilding 2704</u>	
1.	Roof Top Steam	Αŀ

Roof Top Steam AHU
 (2) Steam Unit Heaters
 HW Fintube
 MBH (lbs/hr of steam)
 MBH (lbs/hr of steam)
 MBH (lbs/hr of steam)
 MBH (lbs/hr of steam)

Building 2705 (see note)

1. (2) Hot Water Unit Heaters	48 MBH (lbs/hr of steam)
2. (3) Steam Unit Heaters	260 MBH (lbs/hr of steam)
3. AC-4	2 MBH (lbs/hr of steam)
4. HV-1 (Staging Area)	110 MBH (lbs/hr of steam)
Total Connected Load	420 MBH (lbs/hr of steam)

Note: Refer to Section 5.2.2 for reheat requirements for Building 2705.

Building 2715

1. Hot Water Coil	25 MBH (lbs/hr of steam)
2. (5) Unit Heaters	60 MBH (lbs/hr of steam)
3. Fintube Radiation	2 MBH (lbs/hr of steam)
Total Connected Load	87 MBH (lbs/hr of steam)

In all three cases the same diversity factors established for these buildings are 16-24% (day vs night) during the winter peak month for Buildings 2704 and 2705, and about 6-10% for the intermediate months and 0% during the summer, and 12-24%, 6-12% and 0% respectively for Building 2715.

The space heating loads for the winter peak, the intermediate months, and the summer months are shown in Tables 5.2.1.1, 5.2.1.2, and 5.2.1.3. Day is considered from 8:00 am to 4:00 pm and the rest of the time is considered night.

Table 5.2.1.1, Building 2700's Boiler Plant Demands Space Heating Load - Winter Peak Month

	Winter Peak (Typical February Day) lbs/hr			Total
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/day)
Building 2700/2706 MCA Hot Water	2,000	1,200	2,000	41.6
Building 2700 Misc. Steam Heating	160	110	160	3.4
Building 2700 AHUs w/Steam Heating	420	210	420	8.4
Building 2704	190	130	190	4.1
Building 2705	100	70	100	2.1
Building 2715	20	10	20	0.4
Totals w/MCA	2,890	1,730	2,890	60.0
Totals w/o MCA	890	530	890	18.5

Table 5.2.1.2, Building 2700's Boiler Plant Demands Space Heating Load - Intermediate Month

	Intermediate M	Total		
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/ day)
Building 2700/2706 MCA Hot Water	750	460	750	15.7
Building 2700 Misc. Steam Heating	60	30	60	1.2
Building 2700 AHUs w/Steam Heating	140	70	140	2.8
Building 2704	80	50	80	1.7
Building 2705	40	30	40	0.9
Building 2715	10	5	10	0.2
Totals w/MCA	1,080	645	1,080	22.5
Totals w/o MCA	330	185	330	6.8

Table 5.2.1.3, Building 2700's Boiler Plant Demands Space Heating Load - Summer Months

	Summer Month (Typical Day) lbs/hr			Total
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/day
Building 2700 Misc. Steam Heating	50	25	50	1.0

5.2.2 Reheat

Reheat is either used with spaces where dehumidification is of prime importance, or with zoned temperature control areas associated with offices, etc. These spaces require year-round local temperature control. Dehumidification generally applies to areas with high mixed air humidity levels in the summer. In the colder periods of winter the reheat coils perform the function of heating the mixed cold air to the desired discharge temperature.

Building 2700 has four cleanrooms, three on the fourth floor and one on the second floor, that utilize high volumes of air flow. Reheat is relatively constant during the year because the heat gain in these spaces is low relative to the air flow quantities (i.e.: small temperature rise in space). From Table 3.4.1.2, the four cleanrooms equate to about 1,160 MBH. Entech will assume that 50% (day) - 90% (night) of the load is required year round. Process equipment and lighting loads from the day time operations are expected to add internal heat gain.

The remaining reheat associated with the steam load for Building 2700's boiler plant is for Building 2705. The design consists of three (3) air handlers utilizing seventeen (17) duct mounted reheat coils for zone control. Various temperature settings are required for these zones because of the unique function of this building. The connected design load for these zones is 1,220 MBH

Entech assumes that during winter peak months the reheat required varies from 40-75%. During the intermediate months these values go down to about 30-50%, and finally for the summer months a range of 20-40%.

The values for reheat are summarized in Tables 5.2.2.1, 5.2.2.2 and 5.2.2.3.

Table 5.2.2.1, Building 2700's Boiler Plant Demands Reheat Load - Winter Peak Month

	Winter Peak M	Total		
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/day)
Building 2700 (4) Cleanrooms	920	580	920	19.4
Building 2705 (17) Zones	915	490	915	19.0
Totals	1,835	1,070	1,835	38.4

Table 5.2.2.2, Building 2700's Boiler Plant Demands Reheat Load - Intermediate Month

	Intermediate Mo	Intermediate Month (Typical Day) lbs/hr			
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/day)	
Building 2700 (4) Cleanrooms	920	580	920	19.4	
Building 2705 (17) Zones	610	305	610	12.2	
Totals	1,530	885	1,530	31.6	

Table 5.2.2.3, Building 2700's Boiler Plant Demands Reheat Load - Summer Month

D '11'	Summer Mon			
Building	12am-8am	8am-4pm	4pm-12am	Total (mlbs)
Building 2700 (4) Cleanrooms	920	580	920	19.4
Building 2705 (17) Zones	490	245	490	10.0
Totals	1,410	825	1,410	29.4

5.2.3 Domestic Hot Water

In recent years, the domestic hot water system utilized the only operable generator/storage tank for supplying the needs of the building. Three of the original four had tube failures in the past and were never repaired.

In July of 1995 the last generator failed, thus eliminating the availability of hot water in the building. Areas in the building including the cafeteria, cleanrooms and certain labs have had local electric hot water generators installed in recent years and were not affected.

When the hot water was available, the usage was estimated to have been averaging 500 lb/hr (10 gpm at 100°F rise) during the day and 100 lb/hr (2 gpm at 100°F rise) during the night. Heat loss from the distribution system is included in these totals. The estimate for these losses is 20% of the totals. Peak times during the day may have required as much as 1,000 lb/hr (20 gpm at 100°F rise) for 1/2 hour or less. The 500 and 100 lb/hr total mentioned will be used as constants throughout the year. Table 5.2.3.1 reflects the typical day's impact on the boiler plant for domestic hot water heating.

The remaining buildings connected to the steam system utilize electric hot water generators and therefore do not impact the boiler plant.

Table 5.2.3.1, Building 2700's Boiler Plant Demands
Domestic Hot Water - All Months

D '11'	All Months	Total		
Building	12am-8am	8am-4pm	4pm-12am	(mlbs/day)
Building 2700 D.H.W.	100	500	100	5.6

5.2.4 Cafeteria Steam Use

Section 3.8 identified equipment used in the kitchen that utilizes steam for cooking, warming, and dishwashing. The four devices listed operate throughout the day and utilize steam at rates of 40-60 lbs/hr with the dishwasher peaking at 100 lbs/hr for short periods of time. For purposes of this analysis Entech will assume a constant rate of 200 lbs/hr from

8:00 am - 4:00 pm. Year-round from 4:00 pm - 8:00 am will be considered a load of 0 lbs/hr. The daily demand throughout the year is estimated to be 1.6 mlbs/day.

5.2.5 Boiler Plant Steam Uses

The only use of steam in Building 2700's boiler plant is in the deaerator. Calculating this number takes into account the quantities and temperatures of condensate return and make-up.

Table 5.2.5.2 summarizes the monthly mass balance for feedwater to the boilers, and steam and blowdown from the boilers. Feedwater is calculated by adding an estimated constant blowdown for this plant of 150 mlbs/month to the monthly adjusted steam totals. Make-up water is metered and recorded in the daily logs. Like the steam log numbers, the make-up numbers require an adjustment. Plant personnel noted that the actual make-up is approximately 50% higher than the recorded values. This is due to the piping arrangement near the make-up water meter which allows for some bypassing of the meter resulting in higher flows than recorded.

The deaerator steam demand is the theoretical percentage of total feedwater required to balance the mass and heat input to the deaerators. The equation for determining the steam percentage is as follows, and the derivation of it can be found in Attachment 8.9.

Deaerator Steam (% of feedwater)

$$\frac{lb}{hr} (S) = 100 x \frac{\left(\left(\frac{btu}{lb} (F) - \frac{btu}{lb} (C)\right) - \left(\frac{lb}{hr} (M) x \left(\frac{btu}{lb} (M) - \frac{btu}{lb} (C)\right)\right)\right)}{\left(\frac{btu}{lb} (S) - \frac{btu}{lb} (C)\right)}$$

Condensate Return (% of feedwater)

$$\frac{lb}{hr} (C) = 100 x \left(1 - \frac{lb}{hr} (M) - \frac{lb}{hr} (S)\right)$$

S = Deaerator Steam

F = Feedwater

C = Condensate Return

M = Make-up Water

The results in Table 5.2.5.2 show that the deaerator requires boiler supplied steam which constitutes 6.2 - 7.4% of the feedwater totals throughout the years. The daily demand for feedwater steam during the winter peak month is near 15 mlbs/day. For the typical intermediate and summer months the totals are approximately 9 and 6 mlbs/day respectively.

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 BOILER PLANT - FREDWATER MASS/HEAT TRANSFER BALANCE JULY 1995

TABLE 5.2.5.2

0	Operation	I oo Steam	Adi Steam	Adi Steam Fst Blowdown	Fet Blowdown	Fet Feedwater	Log Make-un		Adi Make-un			Deserator Steam		Condensate Return	te Return
month	(days)	(mlbs/month)	(mlbs/month)		FW (%)	(mlbs/month)	(gal/month)	(gal/month)	(mlbs/month)	FW (%)	FW (%)	(mlbs/month)	(mlbs/day)	FW (%)	(mibs/month)
July	28	3,019	2,334	150	%0'9	2,484	76,400	114,600	229	9.2%	6.640%	165	5.9	%1.87	1,940
August	31	3,994	2,956	150	4.8%	3,106	101,900	152,850		%8.6	%902'9	208	6.7	78.6%	2,442
September	30	3,173	2,343	150	%0.9	2,493	100,100	150,150	300	12.0%	6.902%	172	5.7	75.0%	1,870
October	31	3,825	2,832	150	2.0%	2,982	103,100	154,650	309	10.4%	6.753%	201	6.5	77.8%	2,321
November	29.5	5,232	4,142	150	3.5%	4,292	83,200	124,800	250	5.8%	6.330%	272	9.2	84.4%	3,621
December	31	7,273	6,158	150	2.4%	6,308	103,300	154,950	310	4.9%	6.257%	395	12.7	86.5%	5,454
lanuary	33	9,751	6,784	150	2.2%	6,934	107,300	160,950	322	4.6%	6.229%	432	13.9	%0'.28	6,030
ebruary	28	8,355	7,044	150	2.1%	7,194	109,700	164,550	329	4.6%	6.220%	447	16.0	81.1%	6,267
March	31	7,687	6,494		2.3%	6,644	147,800	221,700	443	6.7%	6.416%	426	13.8	84.7%	5,625
April	30		4,336	150	3.3%	4,486	116,400	174,600	349	7.8%	6.519%		9.7	82.4%	3,694
May	31	5,005	3,964	150	3.6%	4,114	138,700	208,050	416	10.1%	6.734%	77.2	8.9	79.5%	3,271
inne	30	3,874	2,868	150	2.0%	3,018	142,500	213,750	428	14.2%	7.099%	214	7.1	73.8%	2,226
TOTAL	361.5	899'99	52,256	1.800	3.3%	54,056	1,330,400	1,995,600	166'8	7.4%	6.479%	3,503	9.7	82.8%	44,763

	Operating	Log Steam	Adj. Steam	Est. Blowdown	Est. Blowdown Est. Blowdown Est. Feedwater	Est. Feedwater	Log Make-up		Adj. Make-up			Deaerator Steam		Condensate Return	e Return
month	(days)	(mlbs/month)	(mlbs/month)	(mlbs/month)	FW (%)	(mlbs/month)	(gal/month)	(gal/month)	(mlbs/month)	FW (%)	FW (%)	(mlbs/month)	(mibs/day)	FW (%)	(mlbs/month)
July	31	4,020	2,965	150	4.8%	3,115	132,200	198,300	268	12.7%			7.0	75.5%	2,351
August	31	4,353	3,215	150	4.5%	3,365	199,000	298,500	265	17.7%			8.1	70.4%	2,367
September	30	4,352			4.5%	3,349	116,600	174,900	350	10.4%			7.5	78.3%	2,623
October	31	4,669	٣	150		3,850	104,200	156,300	313	8.1%			8.1	81.4%	3,135
November	30	5,286		_	3.4%	4,372	109,000	163,500	327	7.5%	6.491%	284	9.6	82.6%	3,612
December	31	6,177	5,352	150	2.7%	5,502	109,000	163,500	327	8.6%			11.3	85.0%	4,675
January	31	6,854		150		5,941	111,600	167,400	335	9.6%			12.1	85.5%	5,081
February	28			150	2.4%	6,244	92,100	138,150	276	4.4%			13.8	87.0%	5,430
March	31	6,183		150	2.8%	5,364	100,600	150,900	302	2.6%			10.9	85.3%	4,573
April	28			150	3.8%	3,914	93,800	140,700	281	7.2%		253	0.6	82.5%	3,229
May	Plant Down	N/A		N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	A/A	N/A	N/A
June	20	2,160	1,604	100	2.9%	1,704	60,400	009'06	181	10.6%	6.762%	115	5.8	76.7%	1,308
July	33	3,189	2,293	150	6.1%	2,443	92,100	138,150	276	11.3%	6.837%	167	5.4	75.7%	1,850
TOTAL	353.0	59.143	47,413	1.750	3 6%	49.163	1.320 600	1,980,900	3,962	8.1%	6.543%	3,217	1.6	%8 18	40,234

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5.2.6 Steam Distribution Losses

For this report Entech will establish the distribution losses (mass and heat) by determining the residual steam by subtracting the estimated system quantities from the steam produced. Table 5.2.6.1 establishes the expected losses that balance the typical days for winter peak, intermediate and summer months. Table 5.2.6.2 is the same information without MCA water related steam.

Table 5.2.6.1, Building 2700 Boiler Plant Estimated Steam Distribution Losses w/MCA

Use	Winter Pea	k Month	Intermedi	ate Month	Summer	Month
	mlbs/day	%	mlbs/day	%	mlbs/day	%
Total	235.0	100.0%	140.5	100.0%	95.0	100.0%
Heating	60	25.5%	22.5	16.0%	1.0	1.0%
Reheat	38.4	16.3%	31.6	22.6%	29.4	31.0%
DHW	5.6	2.4%	5.6	4.0%	5.6	5.9%
Cafeteria	1.6	0.7%	1.6	1.1%	1.6	1.7%
Plant	14.8	6.3%	9.1	6.5%	6.6	6.9%
Losses	114.6	48.8%	70.7	49.8%	50.8	53.5%

Note: The losses predicted here probably include excess steam production estimates that could be attributed to higher losses in less efficient boilers. The actual steam losses probably are in the range of 30% to 40%. However, the fuel consumed to generate the actual totals is still the same.

Table 5.2.6.2, Building 2700 Boiler Plant Estimated Steam Distribution Losses w/o MCA

Use	Winter Pea	k Month	Intermedia	ate Month	Summer	Month
	mlbs/day	%	mlbs/day	%	mlbs/day	%
Total	188.5	100.0%	100.0	100.0%	95.0	100.0%
Heating	18.5	9.8%	5.0	5.0%	1.0	1.0%
Reheat	38.4	20.4%	31.6	31.6%	29.4	31.0%
DHW	5.6	3.0%	5.6	5.6%	5.6	5.9%
Cafeteria	1.6	0.8%	1.6	1.6%	1.6	1.7%
Plant	11.9	6.3%	6.5	6.5%	6.6	6.9%
Losses	112.5	59.7%	49.7	49.7%	50.8	53.5%

The results in Tables 5.2.6.1 and 5.2.7.1 suggest that the percentage of loss in the summer months are similar to what is expected in the winter and intermediate months. When considering the distribution system and the way the building operates, the high loss results make sense. The distribution system includes a 12" header in the boiler room, and 10" headers to each end of the building. The system sizing was based on the four original boilers producing 60,000 lb/hr. For various reasons the load is presently estimated to peak at about 15,000 lb/hr during the year. Design velocities for the system were probably close to 6,000 ft/min in the headers. Actual velocities in these headers are now expected to peak at 1,500 ft/min and drop as low as 500 ft/min.

Throughout the year the large pipe system relative to the system demand creates excess heat loss due to the large surface areas of the header

piping. In the past, Building 2700 had a fair amount of piping runs not insulated. A report done in 1993 identified these and reportedly most had been subsequently fixed.

During Entech's site investigation, some steam piping and valves were still seen to be without insulation. How these individual sightings compare to the previous report is unknown. Many areas that contain steam lines generally are overheated year round.

In addition to the inherent losses associated with the oversized pipe, it is expected that steam and condensate leaks exist, especially in the underground piping to and from Buildings 2704 and 2705, and from the greatly oversized traps in the main headers in Building 2700 which tend to wire-draw under these conditions. Wire drawing is the passing of steam/condensate across trap seats that cut lines into the seats causing leaks over time.

In the spring of the year it appears many of the users, primarily air handlers, shut off the supply to the coils until October or November. It is expected that during the summer there is a significant increase in the dead-leg pipe runs that have traps and inherently are condensate generators. Intuitively we can consider that the longer steam is in a system (low vs high flow) the more likely that it may convert to condensate prior to use. Based on the ideas presented, the condensate losses in the summer would remain at the levels predicted in these models.

5.2.7 Steam Use Model Summary

The steam totals from the Building 2700 boiler plant predicted in Section 4 have been evaluated and broken down in the past six subsections.

Table 5.2.7.1 balances the estimated daily usage numbers for the average steam production numbers from Table 4.5.4. Table 5.2.7.2 is the same information less the estimated existing MCA system loads including deaerator steam and an 8% line loss to Building 2706 which is in close proximity of Building 2700 boiler plant. The total steam produced in conjunction with the existing MCA load is approximately 6,400 mlbs/yr. All twelve months are accounted for by prorating/estimating from the pre-determined seasonal values.

Table 5.2.7.3 and Figure 5.2.7.4 summarize the different uses for the entire year including the MCA loads. From the usage total for the MCA hot water system was estimated to be 5,550 mmBtu/yr. The yearly reheat total for Building 2700 is approximated 60% or 6,700 mmBtu/hr of the total reheat required between Building's 2700 and 2705

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 BOILER PLANT - SUMMARY OF DAILY STEAM USAGE JULY 1993 -JULY 1995

Boiler Plant w/ MCA Hot Water Loads & Losses

TABLE 5.2.7.1

Domestic Hot Water Cafeteria Use								IMBET	ADEL 3.4.7.1							
Operating Average Steam Produced Space Heating Reheat Domestic Hot Water Cafeteria Use (davs) (mlbs/dav) (mlbs/dav) <td< td=""><td>JULY 1993</td><td>-JUNE 1995</td><td>AVERAGE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	JULY 1993	-JUNE 1995	AVERAGE													
(davs) (mlbs/dav) (mlbs/dav) (mlbs/dav) (mlbs/dav) (mlbs/dav) (mlbs/dav) Demand (%) (mlbs/dav) (mlbs/dav)<		Operating	Average Steam	Produced	Space	Heating	×	sheat	Domestic	Hot Water	Cafete	ria Use	Boiler	Boiler Plant Use	Distrib	Distribution Losses
31 2,775 89.5 1.0 1.1% 29.4 32.8% 5.6 6.3% 1.6 1.8% 31 3,085 99.5 1.5 1.5% 30.2 30.4% 5.6 5.6% 1.6 1.8% 30 2,775 99.5 1.5 1.5% 30.2 30.4% 5.6 5.6% 1.6 1.6% 30 4,275 10.2 1.13 10.7% 31.0 29.5% 5.6 5.9% 1.6 1.6% 30 4,215 140.5 22.5 16.0% 31.0 22.1% 5.6 5.9% 1.6 1.1% 31 5,766 186.0 40.5 24.4% 35.0 17.2% 5.6 2.8% 1.6 0.9% 1.1% 28 6,580 23.5 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.8% 1.1% 31 5,844 188.5 40.5 21.5% 35.6 40.% 1.6	month	(days)	(mlbs/month)	(mlbs/day)	D	Demand (%)	(mlbs/day)	Demand (%)	1 _	Demand (%)	PS		(mlbs/dav)	Demand (%)	E	Demand (%)
31 3,085 99.5 1.5% 30.2 30.4% 5.6 5.6% 1.6 1.6% 30 2,775 92.5 1.5 1.5% 30.2 32.6% 5.6 5.6% 1.6 1.7% 30 4,275 10.5 11.3 10.7% 31.0 29.5% 5.6 6.1% 1.6 1.7% 31 3,256 16.0% 40.5 21.8% 31.0 22.1% 5.6 40% 1.6 1.7% 31 6,293 203.0 49.5 24.4% 35.0 17.2% 5.6 2.4% 1.6 0.9% 1. 28 6,580 235.0 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.8% 1. 31 5,844 188.5 40.5 21.5% 35.0 18.6% 5.6 4.0% 1.6 0.8% 1. 31 3,658 118.0 22.5% 35.0 22.4% 1.6 0.8%	July	31	2,775	89.5		1.1%	29.4		5.6			1.8%				
30 2,775 92.5 3.0 3.2% 30.2 32.6% 5.6 6.1% 1.6 1.7% 31 3,255 1050 11.3 10.7% 31.0 29.5% 5.6 6.1% 1.6 1.5% 31 5,265 1050 11.3 10.7% 31.0 22.1% 5.6 4.0% 1.6 1.5% 31 5,293 203.0 49.5 21.8% 31.6 17.0% 5.6 2.4% 1.6 0.9% 1 28 6,580 235.0 49.5 24.4% 35.0 17.2% 5.6 2.4% 1.6 0.9% 1 30 4,185 135.0 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.7% 1 30 4,185 139.5 21.5% 35.0 18.6% 5.6 4.0% 1.6 0.7% 1 31 2,640 8.0 13.5 31.6 32.5% 5.6	August	31	3,085	99.5	1.5	1.5%			5.6			1.6%				
31 3.255 105.0 11.3 10.7% 31.0 29.5% 5.6 5.3% 1.6 1.5% 30 4,215 140.5 22.5 16.0% 31.0 22.1% 5.6 4.0% 1.6 1.1% 31 5,766 186.0 40.5 21.8% 31.6 17.2% 5.6 4.0% 1.6 0.9% 1 31 6,293 203.0 49.5 24.4% 35.0 17.2% 5.6 2.8% 1.6 0.9% 1 31 5,84 188.5 40.5 21.5% 35.0 18.6% 5.6 2.4% 1.6 0.9% 1 30 4,185 139.5 22.5 35.0 18.6% 5.6 4.0% 1.6 0.7% 1 31 3,658 118.0 13.5 11.4% 30.2 5.6 4.0% 1.6 1.9% 1 30 4,070 13.9 22.3 15.9% 31.9 5.6	September	30	2,775	92.5	3.0	3.2%			5.6			1.7%				
30 4,215 140.5 22.5 16.0% 31.0 22.1% 5.6 4.0% 1.6 1.1% 31 5,766 186.0 40.5 21.8% 31.6 17.0% 5.6 3.0% 1.6 0.9% 1 31 6,293 203.0 49.5 24.4% 35.0 17.2% 5.6 2.8% 1.6 0.9% 1 31 6,280 235.0 40.5 21.5% 35.0 18.6% 5.6 2.4% 1.6 0.8% 1 30 4,184 118.5 12.5% 35.0 18.6% 5.6 4.0% 1.6 0.8% 1 31 3,658 118.0 13.5 11.4% 30.2 25.6% 5.6 4.0% 1.6 1.9% 36.5 2,640 88.0 1.5 17% 32.4% 5.6 4.0% 1.6 1.8% 36.5 1,071 139.9 22.3 15.9% 31.9 22.8% 34.9% <td>October</td> <td>31</td> <td>3,255</td> <td>105.0</td> <td>11.3</td> <td>10.7%</td> <td></td> <td></td> <td>5.6</td> <td></td> <td>1.6</td> <td>1.5%</td> <td></td> <td>6.5%</td> <td></td> <td></td>	October	31	3,255	105.0	11.3	10.7%			5.6		1.6	1.5%		6.5%		
er 31 5,766 186.0 40.5 21.8% 31.6 17.0% 5.6 3.0% 1.6 0.9% 31 6,293 203.0 49.5 24.4% 35.0 17.2% 5.6 2.8% 1.6 0.9% 28 6,580 235.0 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.9% 30 4,185 138.5 40.5 21.5% 35.0 1.6 2.4% 1.6 0.7% 30 4,185 139.5 22.5 16.1% 31.6 22.7% 5.6 4.0% 1.6 1.1% 30 2640 88.0 15 14.4% 30.2 25.6% 5.6 4.0% 1.6 1.4% 30 2640 88.0 1.5 1.7% 29.4 32.8% 5.6 4.0% 1.6 1.2% 30 2650 51.071 139.9 22.3 15.9% 31.9 22.8% 5.6 4.0% <td>November</td> <td>30</td> <td>4,215</td> <td>140.5</td> <td>22.5</td> <td>16.0%</td> <td></td> <td></td> <td>5.6</td> <td>4.0%</td> <td>9.1</td> <td>1.1%</td> <td></td> <td></td> <td></td> <td></td>	November	30	4,215	140.5	22.5	16.0%			5.6	4.0%	9.1	1.1%				
31 6,293 203.0 49.5 24.4% 35.0 17.2% 5.6 2.8% 1.6 0.8% 28 6,580 23.5 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.7% 31 5,844 188.5 40.5 21.5% 35.0 18.6% 5.6 2.4% 1.6 0.7% 30 4,185 139.5 22.5 16.1% 31.6 22.7% 5.6 4.0% 1.6 1.1% 30 2,640 8.0 15 17.4% 30.2 25.6% 5.6 4.0% 1.6 1.8% 30 2,50 8.0 1.5 3.2 3.6 4.0% 1.6 1.8% 30 2,640 8.0 1.5 3.6 4.0% 1.6 1.8% 30 5,01 1.39.9 22.3 15.9% 31.9 22.8% 4.0% 1.6 1.2%	December	31	5,766	186.0	40.5	21.8%			5.6	3.0%	91	%60		•		
28 6,580 235.0 60.0 25.5% 38.4 16.3% 5.6 2.4% 1.6 0.7% 31 5,844 188.5 40.5 21.5% 35.0 18.6% 5.6 3.0% 1.6 0.8% 30 4,185 139.5 22.5 16.1% 31.6 22.7% 5.6 4.7% 1.6 1.1% 31 3,658 118.0 13.5 11.4% 30.2 25.6% 5.6 4.7% 1.6 1.8% 30 2,640 8.0 1.5 1.5 % 31.9 22.8% 5.6 4.0% 1.6 1.8% 36.0 5.0 5.0 1.0 1.5 % 31.9 22.8% 5.6 4.0% 1.6 1.2%	January	31	6,293	203.0		24.4%			5.6	2 8%	16	%80				
31 5,844 188.5 40.5 21.5% 35.0 18.6% 5.6 3.0% 1.6 0.8% 3.0 4,185 139.5 22.5 16.1% 31.6 22.7% 5.6 4.0% 1.6 1.1% 31.9 25.40 88.0 1.5 17% 29.4 33.4% 5.6 6.4% 1.6 1.8% 3.0 2,640 88.0 1.5 1.7% 29.4 33.4% 5.6 6.4% 1.6 1.8% 3.0 2.6.0 51,071 139.9 22.3 15.9% 31.9 22.8% 5.6 4.0% 1.6 1.2%	February	28	6,580	235.0	0.09	25.5%			5.6	2.4%	91	0.7%				
30 4,185 139.5 22.5 16.1% 31.6 22.7% 5.6 4.0% 1.6 1.1% 3.658 118.0 13.5 114% 30.2 25.6% 5.6 4.7% 1.6 1.4% 30.2 25.6% 5.6 4.7% 1.6 1.4% 30.2 25.6% 5.6 4.7% 1.6 1.4% 1.6 1.4% 30.2 25.6% 5.6 4.7% 1.6 1.8% 1.6 1.8% 1.5 1.7% 29.4 33.4% 5.6 6.4% 1.6 1.8% 1.8% 1.5 1.5% 1.5% 1.5% 1.5% 1.5% 1.5% 1.5%	March	31	5,844	188.5	40.5	21.5%			5.6	•		%8.0				
31 3,658 118.0 13.5 11.4% 30.2 25.6% 5.6 4.7% 1.6 1.4% 30.2 25.6% 5.6 4.7% 1.6 1.4% 30.2 25.6% 5.6 6.4% 1.6 1.8% 365.0 51,071 139.9 22.3 15.9% 31.9 22.8% 5.6 4.0% 1.6 1.2%	April	30	4,185	139.5	22.5	16.1%			5.6		_	1.1%				
30 2,640 88.0 1.5 1.7% 29.4 33.4% 5.6 6.4% 1.6 1.8% 36.0 51,071 139.9 22.3 15.9% 31.9 22.8% 5.6 4.0% 1.6 1.2%	May	31	3,658	118.0	13.5	11.4%			5.6			1.4%				
365.0 51,071 139.9 22.3 15.9% 31.9 22.8% 5.6 4.0% 1.6 1.2%	June	30	2,640	88.0	1.5	1.7%	29.4	33.4%	5.6	6.4%		1.8%			43.8	49.8%
	TOTAL	365.0	51,071	139.9	22.3	15.9%	31.9	22.8%	5.6	4.0%	-	1.2%				

Boiler Plant w/o MCA Hot Water Loads & Losses

TABLE 5.2.7.2

JULY 1993.	JLY 1993-JUNE 1995 AVERAGE	AVERAGE													
	Operating	Average Steam Produced	peon	Space Heating	eating	R	Reheat	Domestic	Domestic Hot Water	Cafeteria Use	a I Ice	Roiler	Roiler Plant I Ice	Dietribut	Distribution Losses
month	(days)	(mlbs/month) (mlbs/day	/day) (1	mlbs/day) Do	Demand (%)	(mlbs/day)	Demand (%)	(mlbs/dav)	mlbs/dav) Demand (%)	(mlbs/day) Demand (%)	emand (%)	(mlhs/dav)	Demand (%)	(mlhs/day)	Demand (%)
July	31	2,775	89.5	1.0	1.1%	29.4	32.8%	1	6.3%	1_	1 8%	6.2	-	4	51 1%
August	31	3,085	99.5	1.5	1.5%	30.2			5.6%		1.6%	6.9			54.0%
September	30	2,775	92.5	3.0	3.2%	30.2					1.7%	6.4		45.7	49.4%
October	31	3,030	7.76	8.4	4.9%	31.0		5.6			1.6%	6.4			
November	30	3,685	122.8	8.9	5.5%	31.0				1.6	1.3%	80			
December	31		153.1	11.2	7.3%	31.6		5.6		1.6	1.0%	9.6			
January	31		164.5	15.2	9.2%	35.0				_	1.0%	10.4			
February	28	_	188.4	18.5	%8.6	38.4		5.6		1.6	%8.0	11.9			
March	31	4,850	156.4	12.0	7.7%	35.0	22.4%			1.6	1.0%	66	6.3%	92.4	
April	30		121.3	8.9	5.6%	31.6		5.6		1.6	1.3%	7.9			
May	31	3,110	100.3	4.0	4.0%	30.2				1.6	1.6%	6.5			
June	30	2,640	88.0	1.0	1.1%	29.4	33.4%	5.6		1.6	1.8%	6.1	_	_	
TOTAL	365.0	44,705	122.5	7.1	2.8%	31.9	26.1%	5.6	4.6%	1.6	1.3%	8.0			55.7%

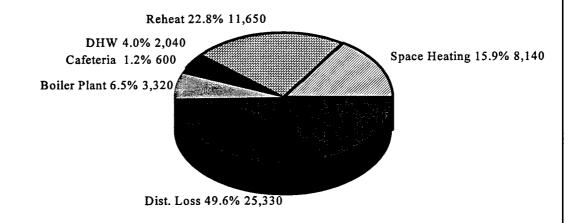
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Table 5.2.7.3, Building 2700 Boiler Plant Steam Use Summary

Usage	Average mlbs/day	Average %	Total (mlbs/month)	Total (mlbs/yr)
Space Heating	22.3	15.9%	680	8,140
Reheat	31.9	22.8%	970	11,650
Domestic Hot Water	5.6	4.0%	170	2,040
Cafeteria Use	1.6	1.2%	50	600
Boiler Plant Use	9.1	6.5%	275	3,320
Distribution Losses	69.4	49.6%	2,110	25,330
Total	139.9	100.0%	4,255	51,080

Figure 5.2.7.4, Boiler 2700 Boiler Plant

Steam Use Summary w/MCA Loads



5.3 Heat Loss Model (Degree Day Method)

The Heat Loss Model as described in Section 2.5.3 of this report, is shown on the following page in Table 5.3.1. The mezzanine level is included with the totals for the first floor level. The peak estimated by the Heat Loss Model is about 8,700 mmBtu/hr (8,700 lbs/hr of steam). The annual Btu usage for space heating Building 2700 has been calculated to be 13,856 mmBtu per year, or 13,440 mcf of natural gas. The Heat Loss Model energy and associated cost values are considered to be higher (40% or more) than the actual amounts required for heating. Building 2700 has high internal heat gains which are not included in the Heat Loss Model. The steam model and the EZDOE model will reflect lower usage totals. Table 5.3.2 summarizes the Heat Loss Model results. These results are for comparison purposed only. Other models will be used for calculating energy savings and costs.

Note: The ventilation rates shown do not include the make-up ventilation air that is mixed and reheated for the cleanrooms on the second and fourth floors. They are treated separately in the reheat portion of the Steam Model only. Their rates and loads are estimated by the Steam Model and the EZDOE Model. The roof loss and infiltration are calculated from the cleanroom square footage in the heat loss model.

Ft. Monmouth, Myer Center - Bldg. 2700 Heat Loss Model (Degree Day Method) Table 5.3.1

				E	EXTERIOR DATA	ATA			VENTIL	ATION, INF	ILTRATIO	VENTILATION, INFILTRATION INTERIOR DATA	R DATA		BELOW GRADE		TOTAL
		WALL	WALL	WINDOW	DOOR	WALL		ROOF	CEILING		SPACE	INF AIR	VENT	WALL	MALL	FLOOR	HEAT
SPACE NAME		неіснт FT	LENGTH FT	AREA SQ FT	AREA SQ FT	AREA SQ FT	WALL U FAC	AREA SQ FT	HEIGHT FT	AREA SQ FT	VOLUME CU FT	CHANGE	AIR CFM	HT FT	LENGTH	AREA SQ FT	LOSS BTU/HR
Ground Floor	BTU/HR COST-\$	11.2	1,440	1,188 40,511 \$468	1,211 75,082 \$868	13,729 76,608 \$886	60.0	15,000 102,300 \$1,183	8.0	69,430	555,440	2,074 138,851 \$1,606	5,000 334,800 \$3,872	E	3,322 24,556 \$284	69,430 55,405 \$641	
First Floor	BTU/HR COST-\$	22.3	3,500	7,020 239,382 \$2,768	585 36,270 \$419	70,550 349,928 \$4,047	0.08	00\$	16.7	179,874	2,998,500	11,194 749,577 \$8,668	10,000 669,600 \$7,743	0	0 0	00\$	2,044,757
Second Floor	BTU/HR COST-\$	15.3	3,500	7,020 239,382 \$2,768	000	46,635 231,310 \$2,675	80.0	00\$	9.7	144,067	1,393,128	5,201 348,260 \$4,027	13,000 870,480 \$10,066	0	0000	00\$	1,689,431
Third Floor	BTU/HR COST-\$	15.3	3,500	7,020 239,382 \$2,768	000	46,635 231,310 \$2,675	80.0	00\$	P.6	144,067	1,393,128	5,201 348,260 \$4,027	13,000 870,480 \$10,066	0	200	00\$	1,689,431
Fourth Floor	BTU/HR COST-\$	15.3	3,500	7,020 239,382 \$2,768	000	46,635 231,310 \$2,675	0.08	150,000 1,023,000 \$11,830	6.7	144,067	1,393,128	5,201 348,260 \$4,027	9,000 602,640 \$6,969	0	000	0	2,444,591
	BTU/HR COST-\$	0.0	0	0 0\$	000	000	0.00	\$00	0.0	0	0	000	000\$	0	000	\$00	0.05
	BTU/HR COST-\$	0.0	0	00\$	000\$	000	0.00	0 0\$	0.0	0	0	0000	00\$	0	0 00	0.80	0\$
	BTU/HR COST-\$	0.0	0	00\$	000	000	0.00	0 0\$	0.0	0	0	000	00\$	0	000	00\$	00%
	BTU/HR COST-\$	0.0	0	00\$	2000	0000	0.00	0	0.0	0	0	0005	00\$	0	000	00\$	0\$
IOIALS	BTU/HR COST-\$		15,440	29,268 998,039 \$11,541	1,796 111,352 \$1,288	224,184 1,120,465 \$12,957		165,000 1,125,300 \$13,013		681,505 7	7,733,300	28,871 1,933,207 \$22,356	50,000 3,348,000 \$38,717		3,322 24,556 \$284	69,430 55,405 \$641	8,716,324 \$100,797
OUTSIDE TEMPERATURE (°F) INSIDE TEMPERATURE (°F) DELT TEMPERATURE (°F) HEATING DEGREE DAYSA'R. FUEL COST, SAUNIT HT VALUE, MMBTU/UNIT SYSTEM EFFICIENCY (XX) SAMMBTU (WITH EFF.)	10 72 62 5,034 \$7.50 1.031 76.0% \$9.57		DOOR U FA WINDOW I ROOF U FA GRND FLO GRND WAI ANNUAL C	DOOR U FACTOR (BTU/SQFT-F-H) WINDOW U FACTOR (BTU/SQFT-F-H) ROOF U FACTOR (BTU/SQFT-H) GRND FLOOR FACTOR (BTU/SQFT-H) ANNUAL COST FACTOR (BTU/SQFT-H) ANNUAL COST FACTOR (BTU/SQFT-H)	USQFT*F*H) USQFT*F*H) USQFT*F*H) R (BTU/SQFT*H) (BTU/SQFT*H) OR (\$/YR/BTU/HR)	1) 1) 1) 1°H) 1'MR)	0.55 0.11 0.4 0.011564		WIND VELOCITY (MPH) INFILTRATION AIR CHANGES/HR INFILTRATION AIR CHANGE FACTOR WHYER GRUD WATER TEMP (°F) GROUND TEMP DELTA TEMP (°F) GROUND YALL FACTOR BELOW GRADE DEL TEMP (AD USTED) GROUND FLOOR FACTOR	CITY (MPI ION AIR CF ION AIR CF IND WATE EMP DELTA ALL FACTY ADE DEL T	1) IANGES/HI IANGE FAC R TEMP (°F OR TEMP (AD I	STOR)	15 0.003733 50 22 0.3 6.6 1.995		HEAT LOSS, MMBTÜYR HEAT LOSS, BTUDEG DAY UNITS FUEL/DEG DAY COST, SYSPYR COST, SYSPYR BTU/HR/SF:	MMBTU/YR TU/DEG DA DEG DAY (R	13,856 2,752,533 2,67 13,440 \$0.15 \$0.13 13

0.62	(C(D)
0.011564	ANNUAL COST FACTOR (S/YR/BTU/HR)
0.4	GRND WALL FACTOR (BTU/SQFT*H)
0.4	GRND FLOOR FACTOR (BTU/SQFT*H)
0.11	ROOF U FACTOR (BTU/SQFT*F*H)
0.55	WINDOW U FACTOR (BTU/SQFT*F*H)
_	DOOK U FACTOR (BIU/SQFI*F*H)

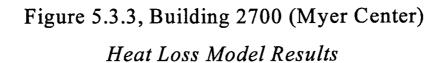
WIND VELOCITY (MPH)	15
INFILTRATION AIR CHANGES/HR	0.2
INFILTRATION AIR CHANGE FACTOR	0.003733
WINTER GRND WATER TEMP (°F)	50
GROUND TEMP DELTA TEMP (°F)	22
GROUND WALL FACTOR	0.3
BELOW GRADE DEL TEMP (AD USTED)	9.9
GROUND FLOOR FACTOR	1.995

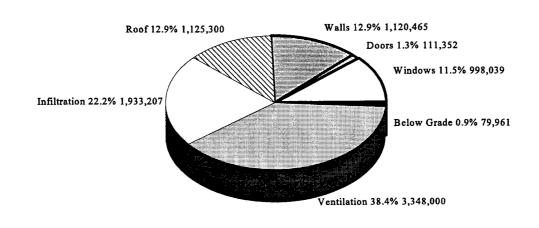
WIND VELOCITY (MITH)	2
INFILTRATION AIR CHANGES/HR	0.7
INFILTRATION AIR CHANGE FACTOR	0.003733
WINTER GRND WATER TEMP (°F)	20
GROUND TEMP DELTA TEMP (°F)	22
GROUND WALL FACTOR	0.3
BELOW GRADE DEL TEMP (AD USTED)	9.9
GROUND FLOOR FACTOR	1.995

Table 5.3.2, Building 2700 Boiler Plant Heat Loss Model Results

Area	Loss (Btuh)
Windows	998,039
Doors	111,352
Walls	1,120,465
Roof	1,125,300
Infiltration	1,933,207
Ventilation	3,348,000
Below Grade	79,961
Totals	8,716,324

The above table indicates the design day heat loss is approximately 8.7 mmBtu or 8,700 lb/hr of steam for heating Building 2700, which is slightly less than the connected loads in Tables 3.4.1.1 and 3.4.1.2. With the other loads included, the actual peak is approximately 12,000-14,000 lb/hr during a normal winter. In January of 1994, the peak actually was close to 16,000 lb/hr. That period of time set fuel consumption records throughout the northeast United States. Figure 5.4.3 graphically displays the Heat Loss Model peak demand results.





Typical of many buildings, Figure 5.3.3 indicates that ventilation and infiltration loads constitute most of the building heating load. The estimates will be compared to EZDOE results later in Section 5.

5.4 EZDOE (Heat Gain/Heat Loss Model)

5.4.1 General

The following sub-sections describe the setup and results for modeling the heating and cooling requirements for Building 2700. Format, reference information and assumptions are presented as input for the EZDOE modeling. Loads, peaks and other findings are presented as results.

5.4.2 Description - Building 2700 Zones and Systems

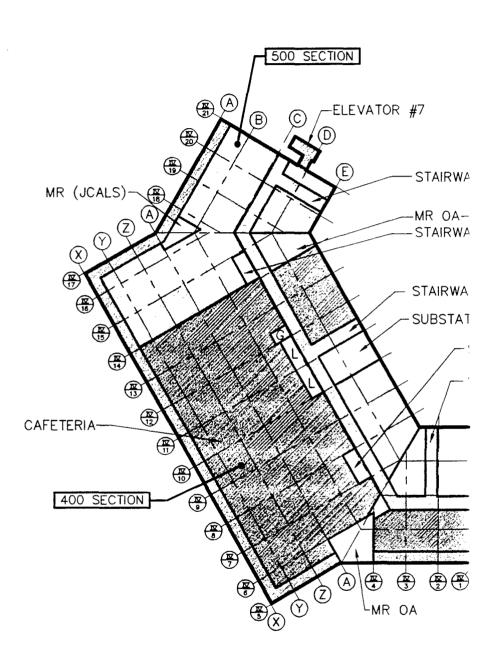
Modeling software as sophisticated as EZDOE requires the user to balance the level of detail and accuracy against the feasibility of modeling within the bounds of the project scope. For this project the building was portioned into zones by floor that were served by systems and central plant equipment that are categorically the same. The basis for this report is a combination of the walk through findings and the data developed in Section 3 outlining the building's equipment and operation. The breakdown is as follows:

- 1. Zones that are supported by the MCA two-pipe system utilizing steam generated heating water and the central chiller plant supplied cooling water. Note: All types of areas utilize MCA-HW fin-tube radiation for skin loss heating.
- 2. Zones served by air handlers utilizing steam for heating or reheat, and a coil for cooling purposes supported by a variety of refrigeration equipment and condensers. Cooling coil fluids are supplied by chilled water or DX (direct expansion) refrigerant systems that are either cooled by air or water. Throughout this section we will categorically refer to these loads as DX with miscellaneous cooling or just DX.
- 3. Zones supported by steam feed devices for heating only.
- 4. Zones that are cooling only because of the low heat loss expected as compared to higher internal loads gained. These recirculation units use a variety of cooling systems (DX w/misc. cooling).
- 5. Zones supported by MCA-HW heating only, utilizing fin-tube radiation and convectors.
- 6. Zones that are not supported by any of the heating or cooling devices identified as installed and operating.

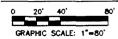
Separating the MCA systems from the others is necessary for determining their contribution to the loads for the entire building. With the existing stand alone plant for MCA-CHW in place, and the fact that new boilers have been targeted for supporting the MCA-HW system alone, this separation was imperative to properly analyze the building for energy and cost savings. Refer to the following figures for the various zones defined for each floor in Building 2700. The associated room numbers for the figures can be acquired from the Fort Monmouth supplied sketches for Building 2700 in Appendix 8.10

Figure 5.4.2.1	Building 2700 HVAC Systems (basement plan)
Figure 5.4.2.2	Building 2700 HVAC Systems (first floor plan)
Figure 5.4.2.3	Building 2700 HVAC Systems (mezzanine floor plan)
Figure 5.4.2.4	Building 2700 HVAC Systems (second floor plan)
Figure 5.4.2.5	Building 2700 HVAC Systems (third floor plan)
Figure 5.4.2.6	Building 2700 HVAC Systems (fourth floor plan)



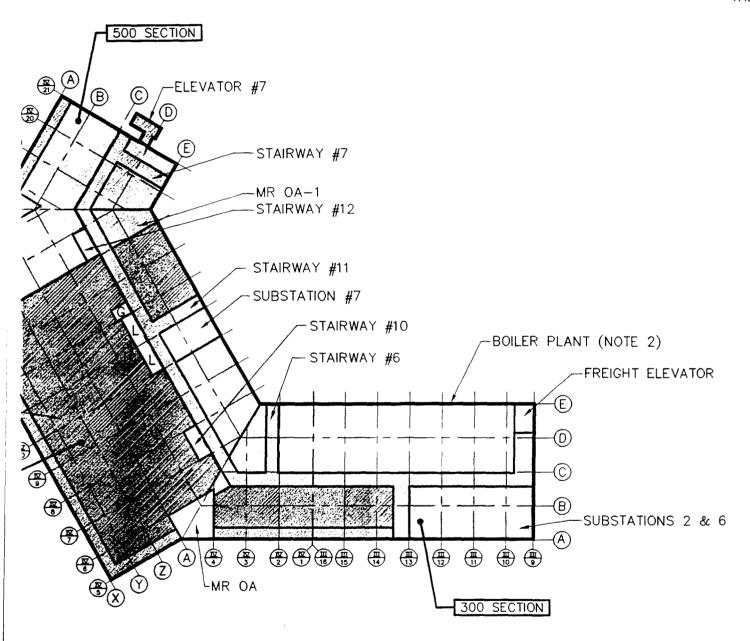


HVAC SYSTEMS - BA

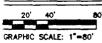


NOTES

- 1. REFER TO T APPENDIX &
- 2. PRESENTLY THE BOILER THE SPACE



HVAC SYSTEMS - BASEMENT PLAN



U.S. A

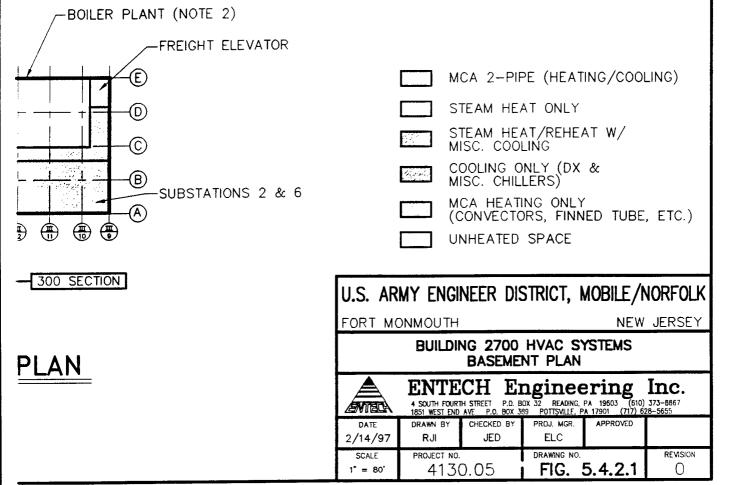


2/14/97 SCALE 1° = 80°



NOTES

- 1. REFER TO THE FLOOR BY FLOOR LAYOUT DRAWINGS IN APPENDIX 8.10 FOR LOCATION OF ROOM NUMBERS.
- 2. PRESENTLY THERE IS NO METHOD OF SPACE HEATING IN THE BOILER PLANT. BOILER AND PIPE LOSSES HEAT THE SPACE AT THIS TIME.



N

P^v

ELEVATOR #1

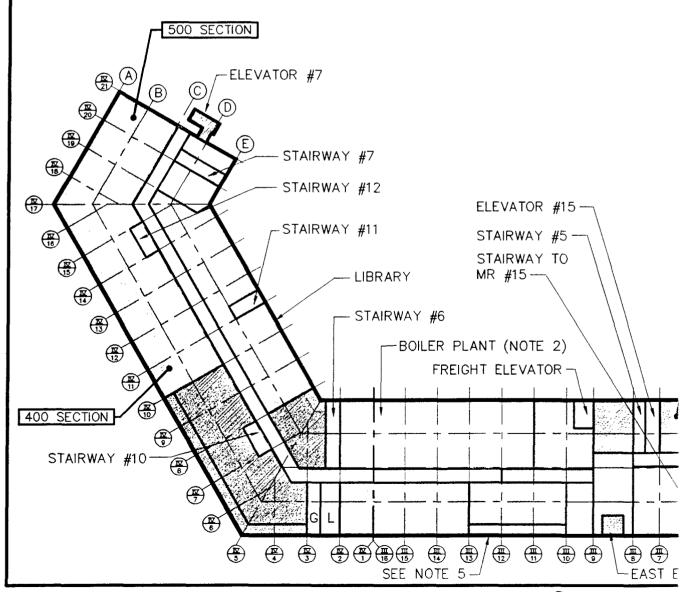
MR 11 (SEE NOTE 3

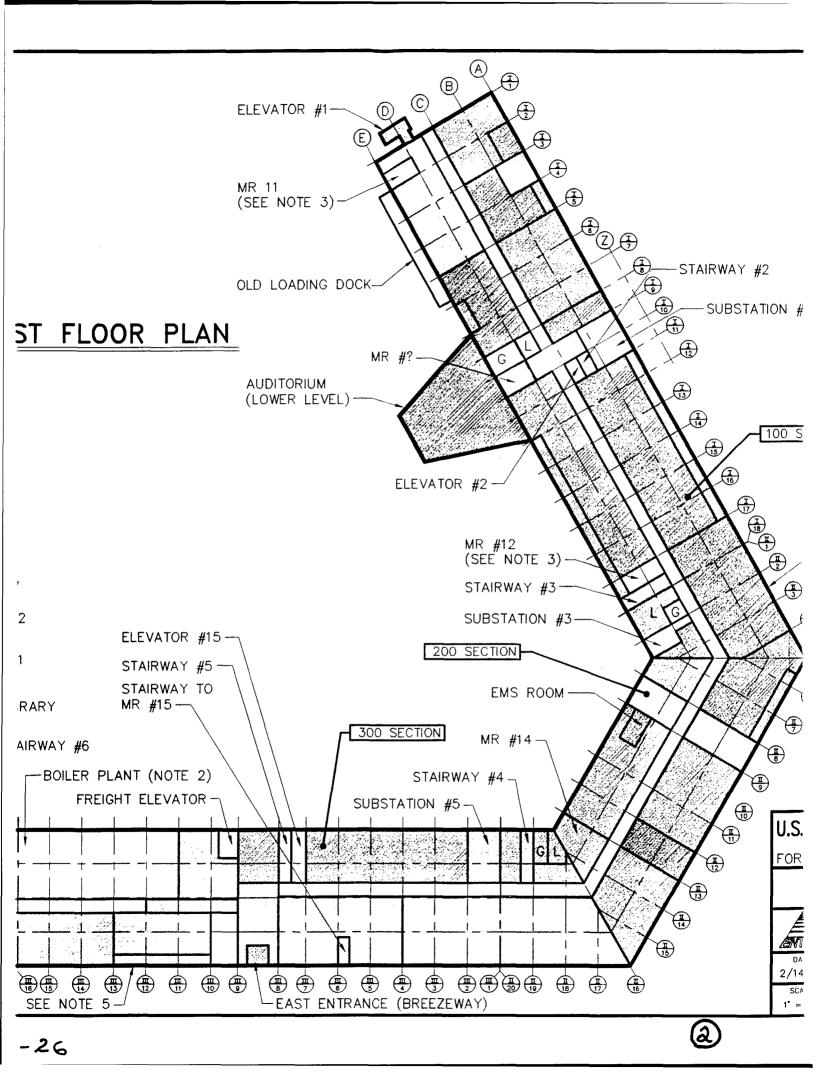
OLD LOADING

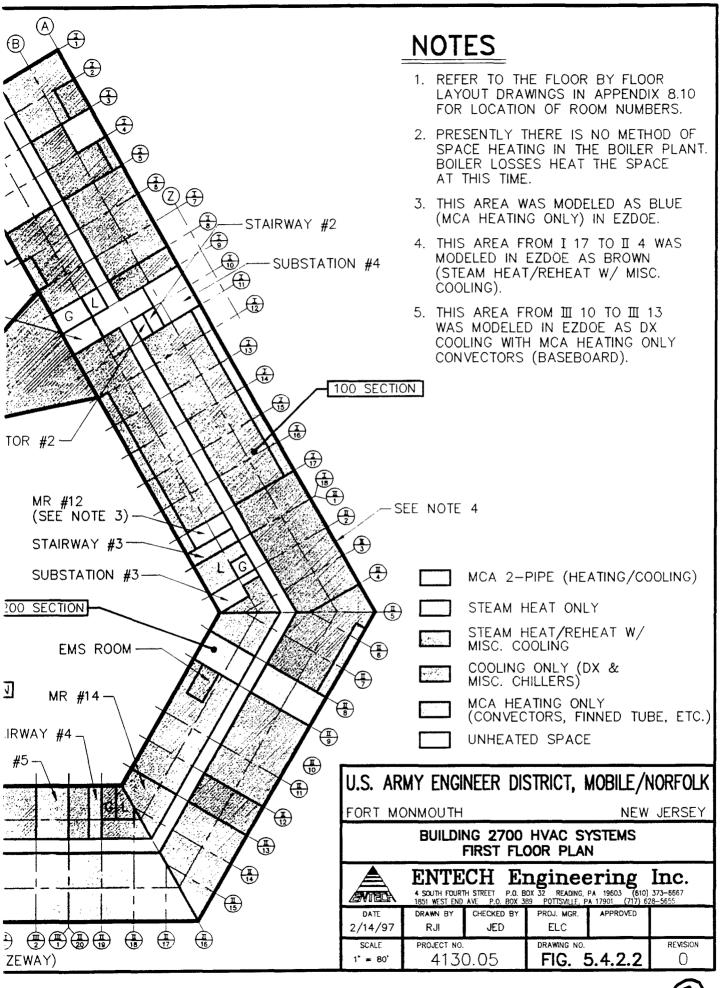
HVAC SYSTEMS - FIRST FLOOR PLAN



AUDITORIUM (LOWER LEV

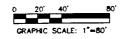




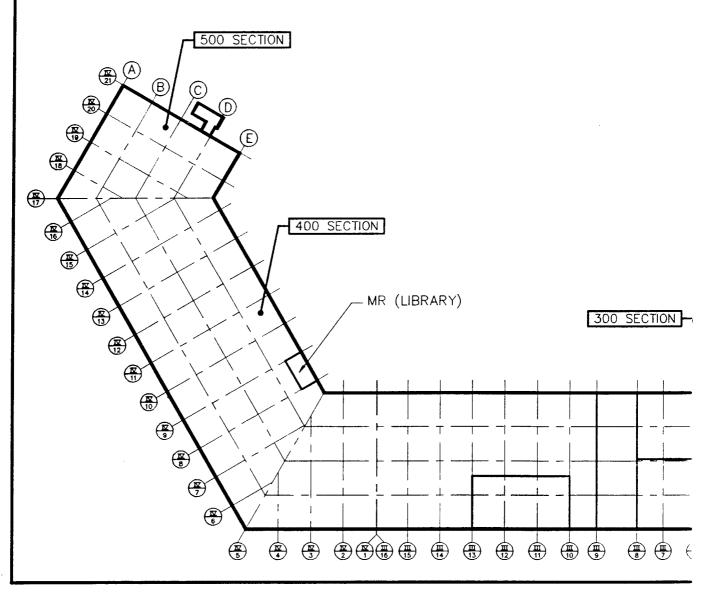


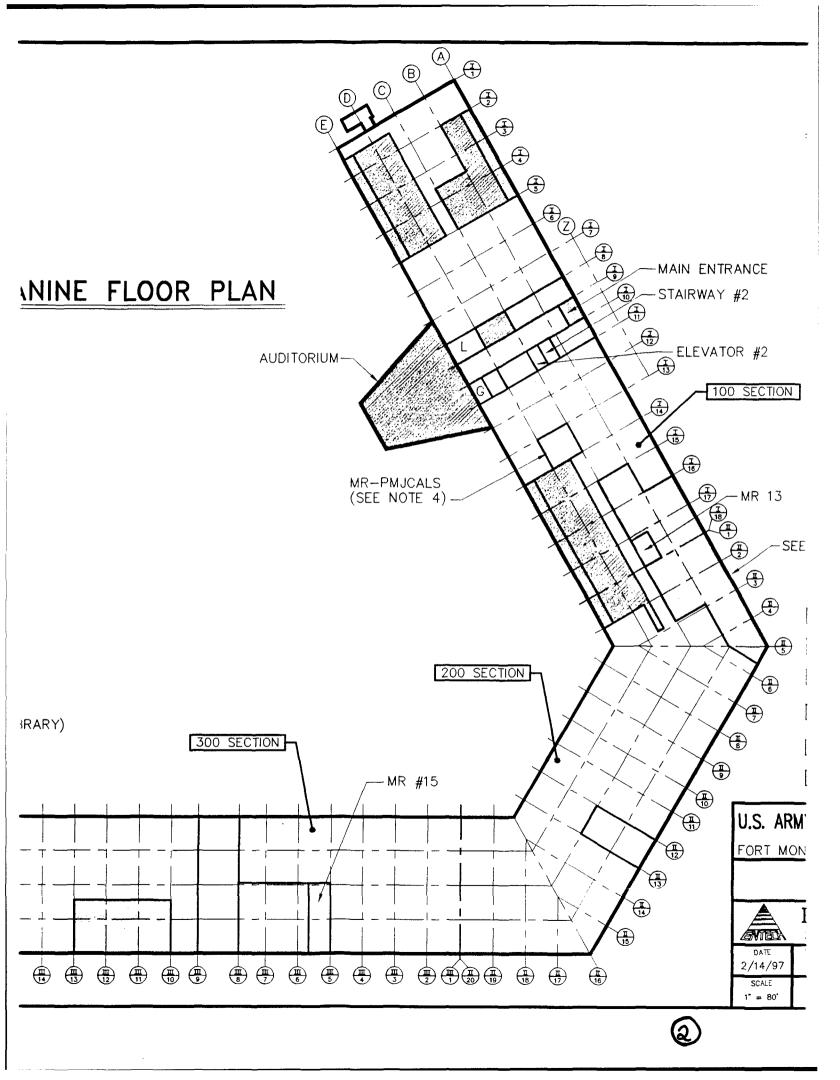


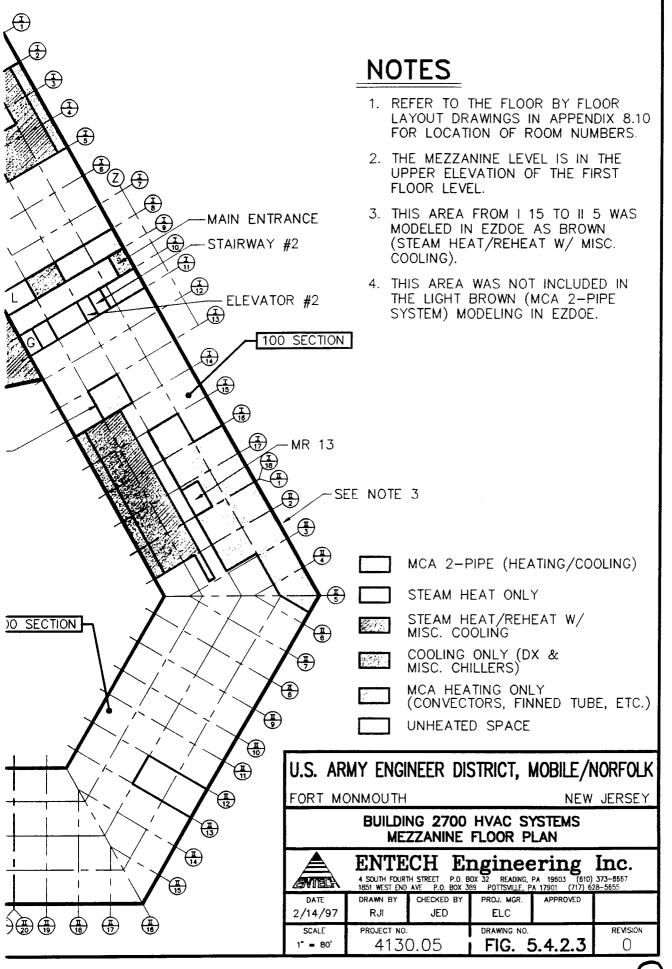
HVAC SYSTEMS - MEZZANINE FLOOR PLAN



AUDIT:







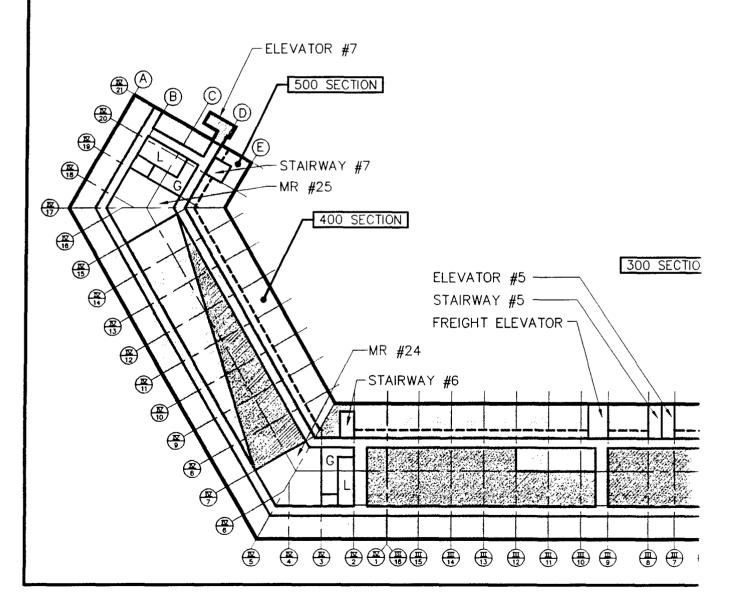
ELEVATOR #1

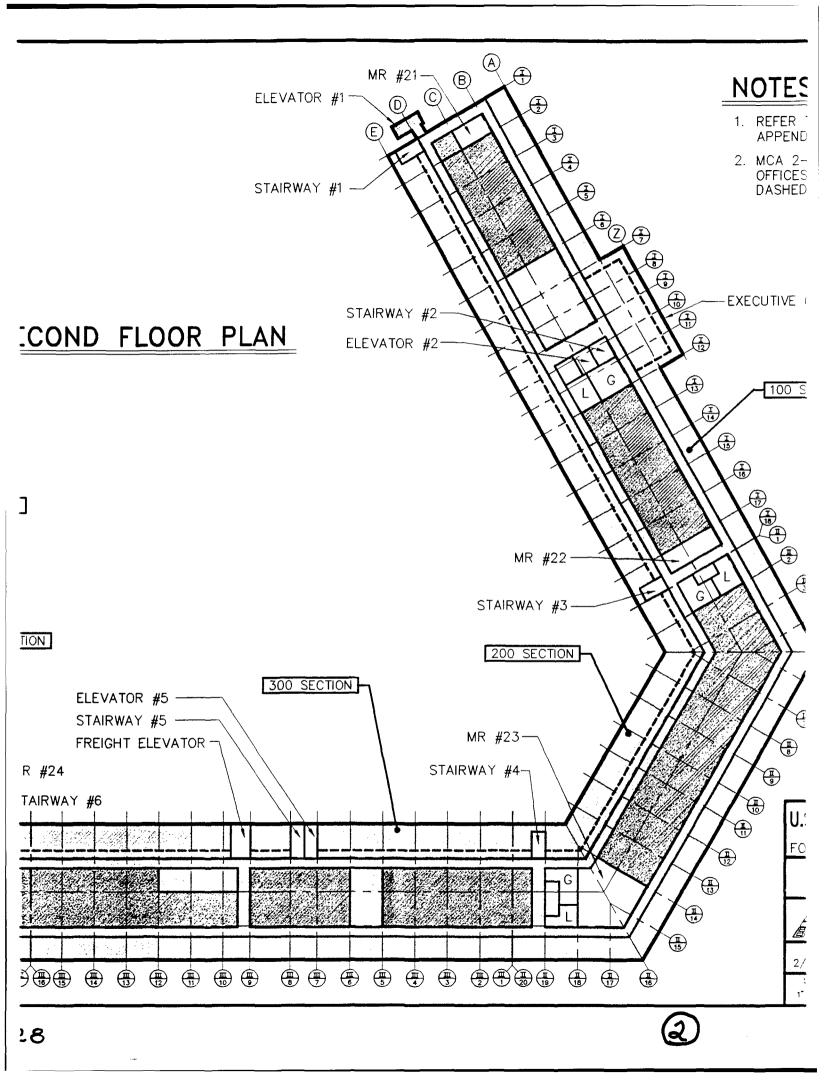


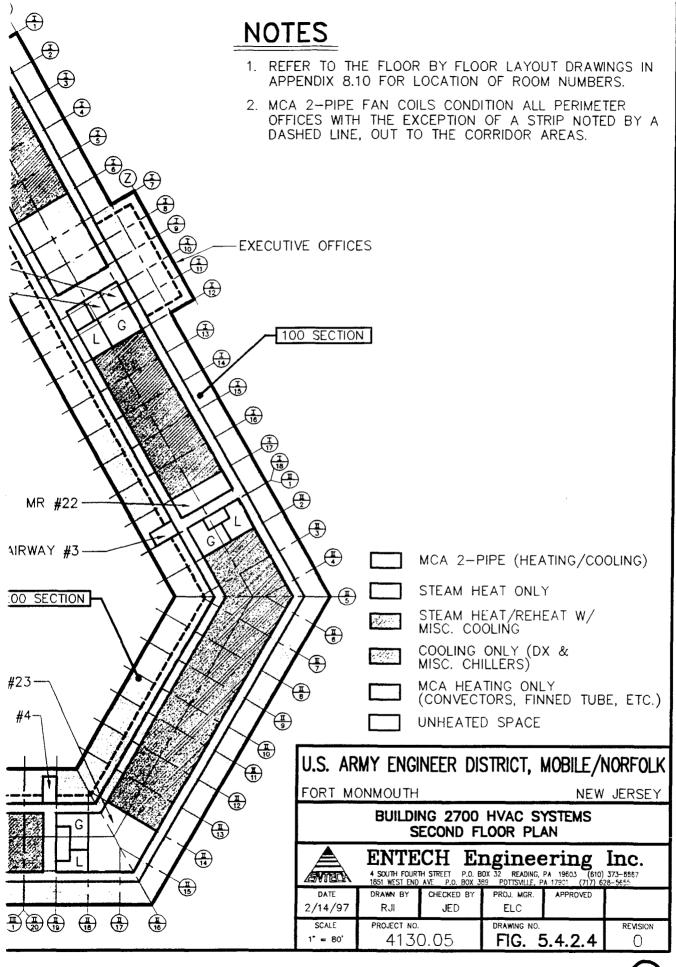
STAIRWAY #1

HVAC SYSTEMS - SECOND FLOOR PLAN









N

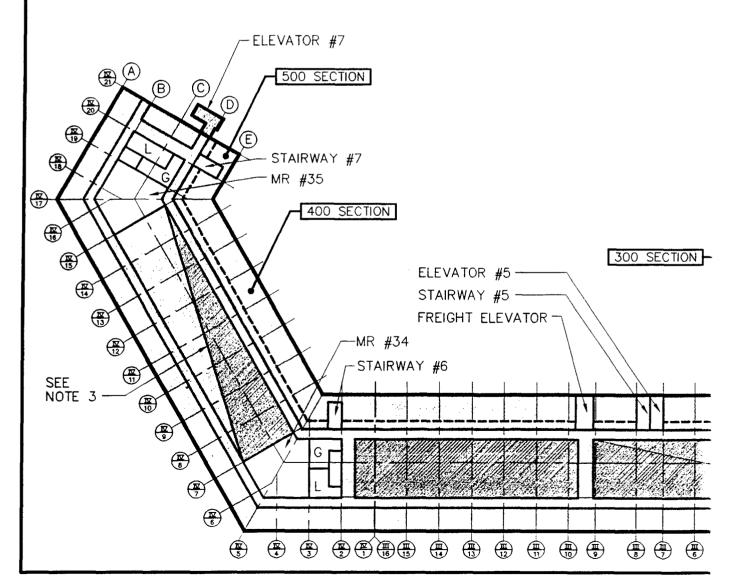
ELEVATOR #1 -

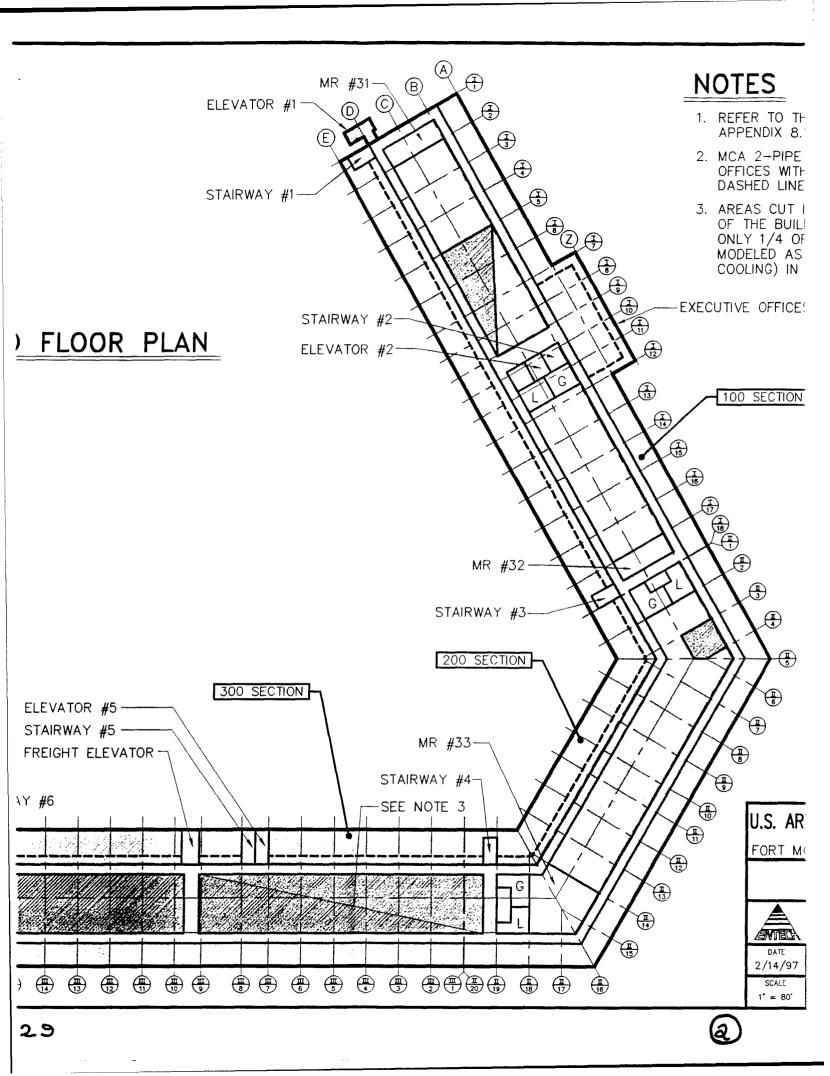
STAIRWAY #1-

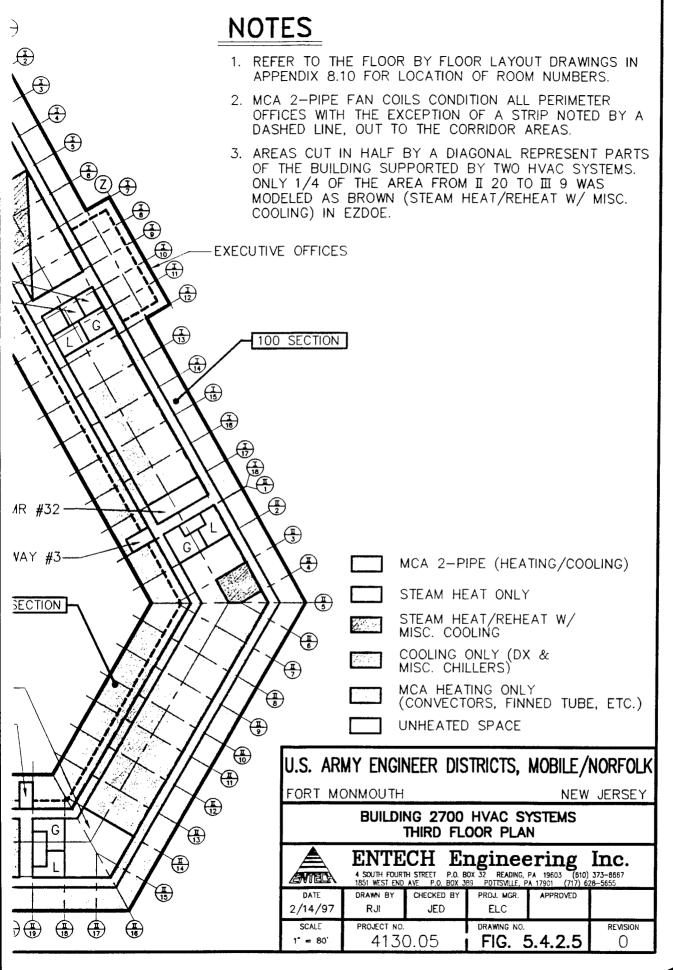
HVAC SYSTEMS - THIRD FLOOR PLAN

ST, ELE









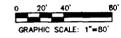
N

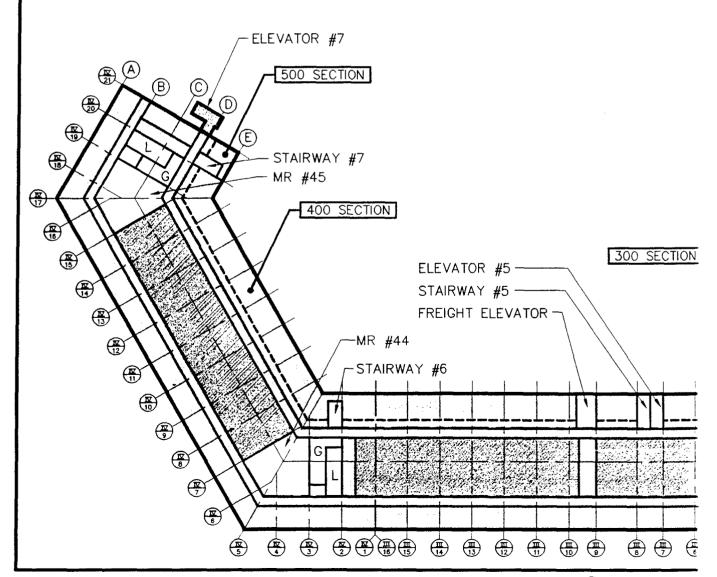
ELEVATOR #1-

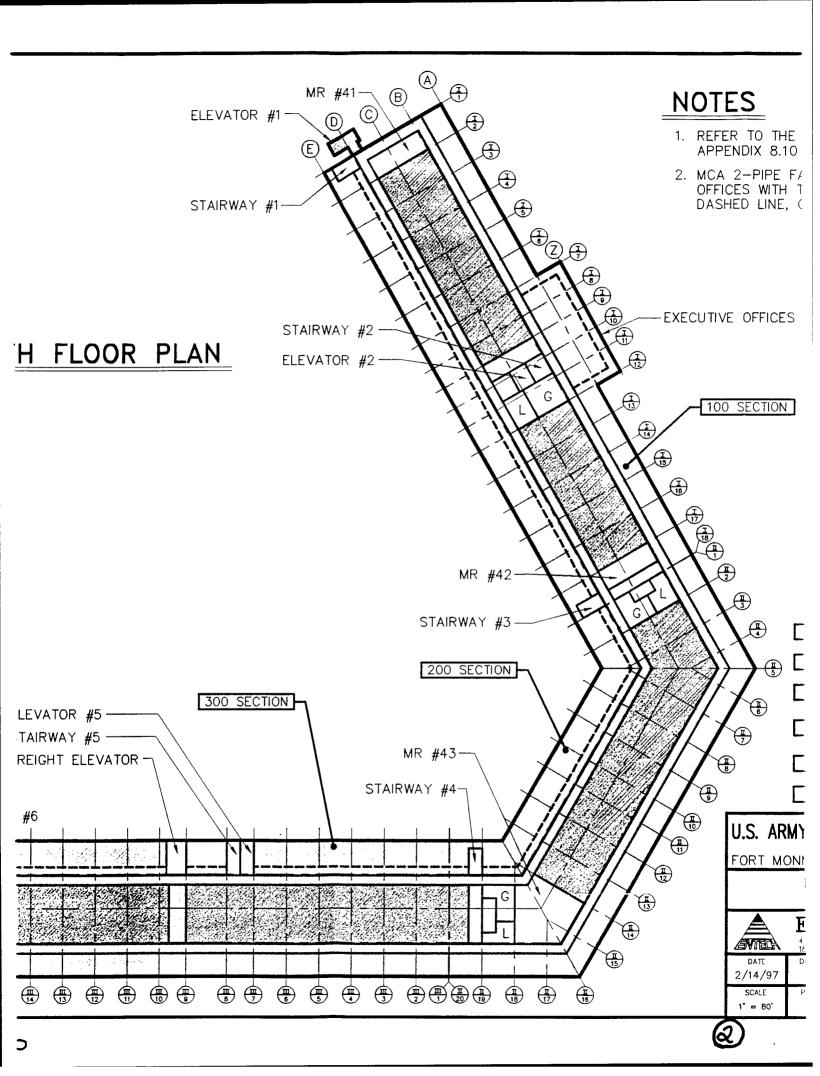
STAIRWAY #1-

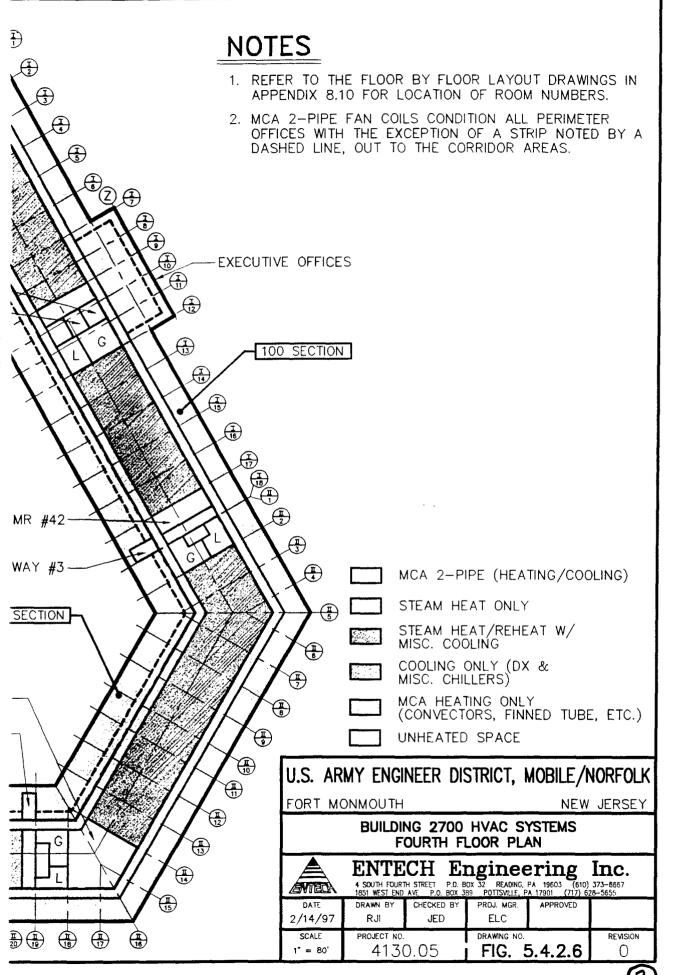
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HVAC SYSTEMS - FOURTH FLOOR PLAN









5.4.3 Input - Building 2700 Zones and Systems

Area Covered: Approximately 650,000 sq ft of the nominal 700,000 sq ft building was identified into one category or another, of the 650,000 sq ft accounted for, 70,000 sq ft is considered unconditioned and it primarily consists of areas like the boiler plant, mechanical or machine rooms (MR), most rest rooms and substations, etc..

<u>City of Reference:</u> Weather information contained in EZDOE for the city of Newark, New Jersey is used as the model baseline for Fort Monmouth, New Jersey.

<u>Construction:</u> Refer to the Heat Loss Model for typical U-values and factors assigned to walls, roofs, windows, etc. in the EZDOE models.

Zone Design Conditions: Most areas will utilize the following criteria.

Winter Room

72° DB (heating)

Summer Room

- 75° DB (cooling)

Exceptions include the following:

MCA HW Heating only -

70°DB (heating)

Cleanrooms

68°DB (heating and cooling)

System and Plant Conditions: Most zones are supported by equipment that have system/plant settings such as:

- Coil Leaving Air Temp (min): 60° DB (for MCA system)
- Coil Leaving Air Temp (min): 55° DB (for DX/Misc.)
- Air-Side Economizer for MCA Air Handlers only
- 1 (lb/hr) Steam equals 1 (mmBtu) of Hot Water

Exceptions include the following:

- Cleanroom Coil (min) 49.5° DB to achieve 55% RH (max)
- Cleanroom Reheat (max) 68°DB

Zone Settings and Parameters: This information is used to establish load criteria for internal heat gains and losses for the EZDOE modeling. Refer to Tables 5.4.3.1 and 5.4.3.2 for the settings by model and by floor respectively. Table 5.4.3.3 describes the EZDOE schedules used.

Occupancy: Approximately 1,400 people are assigned to work at Building 2700 during a normal work day. On average, 30 visitors are expected to be inside the building during a week day. A value of 294 ft²/person used in the table is based on 60% of the 700,000 nominal square foot building being occupied by an average density at any given time. The final numbers for area modeled suggests that % of area populated is higher which would raise the area per person value.

With the value left alone the concentration numbers go up with the 294 ft/person estimate. On the other hand, the use of 200 Btu/hr (sensible) and 250 Btu/hr (latent) per person is probably low for a building of this size and work nature. The final Btu's related to occupancy should fall in line with what is expected. Therefore the rates were left as they were originally set up.

Entech Engineering, Inc.

Note: Specific occupancies are not predicted in this modeling for such areas as the cafeteria or auditorium. The average occupancy will be used throughout these block load analyses under the same schedule conditions.

<u>Lighting</u>: Lighting loads are generally defined as 1 watt/ft² for low level and as high as 5 watts/ft² for cleanrooms and electronic labs. Refer to the lighting schedule for daily expectations.

Equipment: Connected loads for miscellaneous equipment range from 1 watt/ft² for offices and storage to 15 watt/ft² for cleanrooms. Again, refer to the schedule for daily operating expectations. We have assigned a maximum constant rate of consumption of 50% of the connected load during the normal work hours.

<u>Ventilation Rates:</u> Areas supplied with outdoor air are set to 15% (min) with the exception of the cafeteria and the cleanrooms which are set at 20%. Outdoor air increases with use of economizers in the colder months for the MCA units.

Note: Many areas in the building do not receive outdoor air or infiltration air. Some of these are cooling only areas for computer rooms, etc..

Again as mentioned in Section 3, these conditions do not meet the requirements set down in ASHRAE 62-1989 establishing minimum air for healthy environments.

<u>Infiltration</u>: The infiltration rates were set for 0.8 air changes per hour (ACH) year round for zones not assigned with a ventilation rate of 0-20%.

The baseline average infiltration rates were assigned in EZDOE to 0.8 ACH year round since the building is continuously exhausted. The 0.8 ACH rate, suggests an ASHRAE definition for a loose to medium type construction for this building during winter conditions. Summer conditions at this rate are considered high but for this building the exhaust differential governs year round.

Because the building is substantially negative (exhaust > than outdoor air + infiltration) the estimated total exhaust expected to leave the building is 50% or 90,000 cfm of the connected/running exhaust fan total of 180,000 cfm.

Many of the exhaust fans on the roof are designed with relatively low static pressure of 1"± water gauge. The negative conditions existing in the building would suggest that the added static pressure would reduce the capacities of these fans and in some cases the fans probably exhaust very little air. Adding 0.5 inches water gauge of static pressure to many of the smaller fans would reduce their capacity significantly with some moving a minimal amount of exhaust air. Total exhaust equates to the ventilation rate plus the infiltration rate. The estimated connected outdoor air quantity is about 65,000 cfm. Modeling factors in EZDOE

project infiltration totals to be about 25,000 cfm to bring the total exhaust to about 90,000 cfm.

Schedules: Generally the schedules are similar between the heating and cooling system. Refer to Table 5.4.3.3 for a synopsis of the schedules used in the EZDOE modeling. To recall, the MCA-HW system is only available from October 15 to May 15 and vice-versa for MCA-CHW. Otherwise steam heating and the DX-Misc. cooling devices are available year round.

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FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING #2700 - EZDOE SCHEDULES

TABLE 5.4.3.3

	WINTER			SUMMER		
Dates:		May 15		May 16 thru	Oct 15	
	Oct 16 thru	Dec 31				
Schedule:	WkDay/End	Times:	Percent:	Wk. Day/End	Times:	Percent:
Оссирапсу	-Day	12a 6a	7	Day	1a - 6a	7
		7a 8a	70	ł	7a 8a	70
		9a - 2p	90 100		9a - 2p	90
		3a - 2p	90		3p	90
		4p	70	1	4p	70
		5p	25	ì	5p	25
	•	6p	15		6p	15
		7p - 11p	7		7p - 12a	7
	-End	12a - 11p	7		12a - 11p	7
Lighting	-Day	12a - 6a	10	-Day	12a - 6a	10
		7a	50	1	7a	50
		8a 9a-2p	90		8a 9a - 2p	90
		9a-2p 3p	100 90	ľ	9a - ∠p 3p	100 90
		эр 4р	70		4p	70
		5p	25		5p	25
		6p	15		6p	15
		7p - 11p	10	1	7p - 11p	10
	-End	12a - 11p	10	-End	12a - 11p	10
Infiltration	-Day & End	12a - 11p	80 (of 1 achg/hr)	-Day & End	12a-11p	80 (of 1 achg/hr)
Heating Available						
- MCA Heating System	-Day & End	12a - 11p	ON	-Day & End	12a - 11p	OFF
- Steam Heating (all types)	-Day & End	12a - 11p	ON	-Day & End	12a - 11p	ON
Cooling Available						
- MCA Cooling System	-Day & End	12a - 11p	OFF	-Day & End	12a - 11p	ON
- All Other Cooling Systems		12a - 11p	ON	-Day & End	12a - 11p	
D. T 0.45	D 0 Fd	40- 44-		D 05-4	10- 11-	
Rm. Temp. Setting - Except Some Htg. only Areas	-Day & End -Day & End	12a - 11p 12a - 11p	72 (70)	-Day & End	12a - 11p	75
- 4TH Fir Clean Room (Steam/ReHt. w/DX)		12a - 11p		-Day & End	12a - 11p	(68)
Equipment	-Day	12a - 6a	15	-Day	12a - 6a	15
		7a-6p 7p-11p	50 15		7a-6p 7p-11p	50 15
	-End	12a-11p	15	-End	12a-11p	15

5.4.4 Results - Building 2700 Zones and Systems

The results from the EZDOE modeling are intended to support/disprove information presented previously for the equipment connected loads in Section 3, the building and the steam use and heat loss models in Section 5. A summary of the EZDOE cooling and heating loads follow in Table 5.4.4.1. Refer to Appendix 8.11 for a copy of the results for the three models.

Table 5.4.4.1, Building 2700 - EZDOE Heating and Cooling Results-Base Case

Plant/System	EZDOE	Heating	EZ	DOE Cool	ling
	Peak (mmBtu/hr)	Total (mmBtu/yr)	Peak (mmBtu/hr)	Peak (tons)	Total (mmBtu/yr)
MCA 2-Pipe Heating & Cooling	4.7	3,460	7.7	640	7,690
MCA HW Heating only	1.0	1,940	***		
Steam w/ DX & Misc Cooling	3.1	8,930	4.4	370	14,210
DX & Misc Cooling			3.8	320	14,860
Totals	8.8	14,330	15.9	1,330	36,760

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING #2700 - EZDOE OUTPUT SUMMARY TABLE 5.4.4.2 - SORTED BY MODEL

L			2000					OUTSUDE A IR	L	100	HEATING	Zone Max. 88-A	BASEBOARD		COOLING SS A	Zone Max. 88-A	F	1007	ſ
_!		-	a de		Servina		Bergine				Bys. Ld Ann.	Monthly Demand	Zone 88-8	Max. Rate	8ys. Ld Ann.	Monthly Demand	_	Model	Ē
•		Color (s) FT)	FTMO+ Floor	ZONE	System #1	8 ystem #2 8	System #3	(X cfm)	(H)	(cljj)	Tot. (MMBtu)	(MBtuh)	Tot. (MMBtu)	(MBtuh)	(MMBtu)	(M8tuh)	98	÷ OHL	-
Ľ	200	14 Tan	80.0	Inferior Perimeter	MCA-AHIJ		_	\$2	2.689	17.920	-26	82			129	524	•	QV V	-
•	MCA 2 Dee		90	Exterior Perimeter	MCA-AHU			5	3.888	25.920	=	85			100,1	912	-	Ş	7
-	MAR 2.Pine		90	Infarior Perimeter	MCA-AHU			5	714	4.760	,	•			,	1	-	ş	-
	MCA 2-Pipe	t	3	Exterior Penmeter	MCA-Fan Coil					27,710	763	571.1			1.085	1,289	2	Ş	-
-	MCA 2-Ppe		7 90	Interior Perimeter	MCA-Fan Coil				-	21,760	,	,				1	~ .	8	
-	MCA 2-Ppe	Lt Tan	AC0	Middle	MCA-AHU			12	3,680	54 400	2	13			8	£ .	•	3	
-	MCA 2-Pipe	Lt Tan	AC0	Exterior Perimeter	MCA-Fan Coil					27,710	8	1,173			580	582.	—	Ş	
-	MCA 2-Poe		ACG 3	Interior Perimeter	MCA-Fan Coil				-	21,760	ı							Ş	•
•	MCA 2-Pipe	_	3	Middle	MCA-AHU			5	4.478	23.850	\$	151			8	910	-	٠	- :
=	MCA 2-Pipe		₽ VC0	Extenor Perimeter	MCA-Fan Cod			_		32,540	386	9				98.	•	3	2 :
=	MCA 2-Pice	11 Tes - A	\$ 80 8	Interior Perimeter	MCA-Fan Coil	-	•	-		28.52		•					•	Ş	= :
=	MCA 2-Pipe	Lt Tan	¥C0 ₹	Middle	MCA-AHU			15	4.511	30.070	321	425			929	1.48	-	Ş	~:
==	MCA 2-Pipe Summary	Lt Ten A	ACO AM	All Model ACD Zones	Model ACO Sys.				19,938	289,920	3,454	6,000	Company of the Compan		2697	2,719	₹	8	= :
: :		┝	2		Medi in a			-		500	3	877			٥		•	980	=
=	Statem Heat Crey	-	2	COTTOORS & MISC. NOOTING			-	•			3 5	1			5	ţ	•	500	
=	Steam Heat/RH w/ DX & Med Cooking	_	88	Cafetaria, Computer/Lab Rooms	Steam-AHU	DX Cooling	N THE	R 9	4.73	200	32.7	à E	3		70		۰.	3 8	: :
= :	Steam Heat Only	+	818	Miled Rooms	Seem On Design			2 4	20.3	200	200	320			786	2	-	BBO	-
= :	Steam Heat/RH w/ DX & Med Cooling		200	Onces, computer, and	OLD THE PARTY OF	N Coding	•	2 5	3	2	; -	2 2			2,879	816	. ~	8	=
2 :	Steam Heavill of U.S. & Misci. Cooking		3 :	WINDOW.	05-11-11-1	A CONTRACTOR OF THE PARTY OF TH		2 \$	25.50	2.		3 \$			25.	124	•	98	=
= ::		+	200	MICON	DISTRIBUTION OF THE PARTY OF TH	DA Cooling	1	2 8	2000	2	4 33	500			8178	1 708		880	2
2		_	200	Middle - Clean Room	DLY-WIE	TO COOL		3 :	3 8	000	200,0	2 2				. 8		2	
=				Widdle - Office/Labs	Steam-AHU	DX Cooling		13	88	0.540	3	8			577	8	•	2	
122	22 Steam Heat/RH IN DX Cooling Summery	Ok Ten B	880 ALL	ALL All Model B80 Zones	Model BB0 Sys.	DX Cooling			24,137	164,620	10,028	3,424	1,100	241	14,714	4.372	₹	3	2
:		,	147	Exterior Darimeter	DX.AHU	MCA HR-Fin Tube/Comy				1.890	0		٥	8		2	•	3	2
3 2	_				_			0		2,820	0		•	ō	25	88	•	3	z
		3	3	Misci Exterior & Interior Perimeter	DX-AHU	MCA Ht-Fin Tube/Conv.		0		25,900	0		0	467		613	-	3	2:
12	i	╄	3	Misci Exterior & Interior Perimeter	Γ			٥		13,190	0		0			314		3	z :
×	_		- -	Miscl. Exterior & Interior Perlmeter	_	MCA Ht-Fin Tube/Conv.				-	•	55	745	515	_	į	- (3 8	à :
2	Ť	+	3	Widdle	DAY-XCI			-		78	5				0/7/5			3	1
2			3	Middle	DX-AHU					18,870	0 0				977	3 5	, ,	3 8	3
2	7		+					9		3	2	4	200	2	20.0			3	
Ξ:	MCA Heat Only	3 2	33	Elevator Tower Spaces at Ends Flavator Tower Spaces at Ends	2	MCA HI Fin Tube/Conv				0	0	1	2	3			} ▼	33	; ;
: :	Ī	Sive	+	All All Model CA3 Zones	Model CA3 Sys.		Ī		•	158,411	۰	286	639	1,317	14,880	3,782	₹	3	2
-		_	!-				WEC.										T	_	
_							.S. 18.		44.175	413 951	13 482	9.008	1.939	1.558	25.25	15.872	Ī		_
ŀ		1	The second	1000	Sections	Servina	1	Į		÷	AFATING SS.A	Zone Max 35-A	BASEBOARD		C00114G \$5.4	Zone Max. 83-A	1000	1002	Ē
<u>.</u>	e Consumo Percentica:	Color (s)	Model 100		System #1		System 83	_	_	apply Flow	Svs. Ld Ann.	Monthly Demand	Zone 83-8	Max. Rate	Sys. Ld Ann.	Monthly Demand	_	Model	•
		<u> </u>	TWO		_			OUTSIDE AIR		(ctm)	Tot. (MMBtu)	(MBtuh)	Tot. (MMBtu)	_	(MMBtu)	(MBtuh)	_	FTMO+	٦
J							ı												

System Boiler Plant Loads	mmBtu	10898 THEMBELL 5,394
Soiler Loads	3.1	828
ed Water Loads	7.7	7,680
Loads	8.2	20,07

25 July 86

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING \$2700 - EZDOE OUTPUT SUMMARY TABLE 5.4.4.3 · SORTED BY FLOOR

				ļ				711	OUTSIDE AIR		8002	HEATING	Zone Max. 55.4	BASEBOARD		COOLING 85-A	CONG MAX. 855-A	3	3	-
	- Contract of the contract of	_	Model			Serving	Serving	Berving	-		ŧ	Bys. Ld Ann.	Monthly Demand	Zone 88-8	Max. Rate	Sys. Ld Ann.	Monthly Demand	2 5	No de	Ę.
E -		Color (s)	FTMO+ Floor	100	ZONE	System #1	System #2	-	(Keffin)	Œ	Ē	-	(MBtuh)	Tot. (MMBfu)	(MBtuh)	(MMBD)	(MBGDI)	4	1	Ī
1			H	\mid				_	;			ŧ	0000		_	6010		_	9	_
-	MCA 2-Pipe	1 Ja	Ş	Ē				_	2 0	7,000	26.5	2002	34		_	00			88	~
•	Steam Heat Only	Magenda	980	<u>5</u>		Steam-Unit Heater			> 5	***	2 2		229	4100		5210		-	8	_
•	Sharn Heat/RH w/ DX & March Cooling	Š	980	Cart	Cafetaria, Computer/Lab Rooms	Steam-AHU	DX Cooling	WCA-W	3	0/4	200	200	2	-		0.77.0		•	3	
	Coolog DX & med Chilers w/ACA Heat	Green & Blue	3	5	Exterior Perimeter	DK-XU	MCA Ht-Fin Tube/Conv.	_	5 6			9 6		· c	3	226	· 88		3	
-	Coulon (Dr. & mine) Chillery)	989	3	<u> </u>	Interior Perimeter	DX-AHU		_	5		2,820	5	\$			•			3	
• •	THE PART OF	5	_	B-3 Elev	Elevator Tower Spaces at Ends		MCA HI-Fin Tube/Conv.		-		0	5	200	ľ		947	700.0			
	PASSACRET OF DOOR SUMMER		۲	8	Ali Basement Zones	Basement Sys.				1404	60,170	1,73B	7,042			200				1
	avacacy of the summer		İ	1													Cio	-	400	
		2			Sylactor Parimeter	MCA-AHU		_	\$	200	25,920	•	0.967		_	3			3	
-	MCA 2-170		35	į	Interior Parimeter	MCA-AHU		_	5	ž	4,760		,					-	3	. :
-	MCA 2-Ppe	2	3			Charm lost Hand			•		13,610	7100	0 607			8		-	3	2
2	Steam Heat Only	THE COMM	2		CI. ROOM	THE PARTY	OX Confine	_	4	536	10 240	3100	2380			3870	ž	-	8	=
=	Steam Heat/RH w/ DX & Med Cooking	2	999	<u></u>	Offices, Computer/Labs	OLD THE PARTY OF	Sales And age	_		!	Š	•		۰	467	2.527.0		-	3	=
=	Control (DX & mind Chilers) w/ACA Heat	Green & Blue	3	~ Z	Miscl. Extenor & Interior Penmeter	DX-AHO	MCATIFFI IDECOM			1					l	1 433 0		_	3	=
=	Cooling (DX & med, Chillen)	5	3	 E	Misci Exterior & Interior Perimeter	DX-AHU		_	5		2	•	415	745				_	3	2
: :	100 100	978	3	W.	Med. Exterior & Interior Perimeter		MCA HILFIN TuberConv.					1	200			7	2 611	-		-
į	-		ĺ	-	All 1st Floor Zones	111 Floor Sys.				136	177	37.7	2011					-	-	
1	-																		- 43	:
	_	1		, E	Extentor Perimeter	MCA-Fan Coil		_			27.710	7630	1,173			280	807	٠,	3 5	: ;
	_		5	1	Internor Perimeter	MCA-Fan Coil					21.760							+	3 5	
=:	MCA 2-108		200	S S	-	MCA-AHU			15	3660	27.400	50	1310					• (3	::
=		1 2	3 5	1	Thirt is	Steam-AHU	DX Cooling		£	4,413	8	-	28			7.07.0		•	3 3	
=	٠.	5	3	1	-	DX-AHU			0		27,660	0				3.2/6		7	3	3
2		5	3	7	Total Passes	2nd Floor Sug			-	8,073	130,950	2	1,369	•	9	8	3,010	7		. :
=	SECOND (ZMd) PLOOR Summery			,	ALL LING THOMES													_		;
i	_		_			MCA.Ean Cod					27,710	7830	1,173.0			1,065 0	1288		3	2
=		5	3	5	Exterior Fermana				_		21,780		1					-	9	2
2	-	14	Ş	2	Interior Penmeter	MCA-Pari Con			15	4477.5	29 850	160	151.0			1,0610	016	-	ş	2
Z	MCA 2-Pipe	ž	8	N N	•	MCA-ATIO	N. Carlina	_	Ť	2,4	17 170	20	SS		_	1,586.0			8	2
=	Steam Heat/RH w/ DX & Mind. Cooling	ğ	8	P P	Middle	OLY HERO	Pilloon Vi		2 C	1	18.870	0			_	2,235 0	3	n	3	2
*		Gee G	3	Middle	•	DX-AND			1	7.051	115 340	785	1.374			5,957	3,176	-		2
2	•		1	₹ ~	All 3rd Floor Zones	and Proof aye.			-	1									<u> </u>	
iii	-			H							075.02	13660	1,440.0			1,1110	1180	-	YCO	2
2		<u>1</u>	3	5	Extenor Penmeter	MCA-THI CO					25.520		. 1					-	Ş:	\$
2	=	5	3		Interior Peremeter	TO A ALI			15	45105	30,070	3210	425.0			8780	1/8	-	ş	2
2		<u>ج</u>	2	0	WIGOR	Second Second	OX Cooling		3	10.000	20000	6,3200	903.0			8,4180	•	•	8	=
Ξ	-	S i	2 2		Middle - Creen room	Sham-AHI	DX Cooling		2	98	0499	280	640			4230	88	-	3	2:
2	-/-	200	3 3	1	The second second	DX-AHU			0	-	080.080	٥				5,027 0		•	33	2 :
2		5 6	3 5	1	Slevetor Traine Spaces of Fode	_	MCA Ht-Fin Tube/Conv.				0	0	-		Ī			-	3	: :
3			3		All 4th Floor Zones	4th Floor Sys.				15,507	213,850	8,033	2,832		•	757,67	Cac'o	•		: (
Z į	LOOKIN (an) LOOK SHIPE I																	_		
_			_	_				TOTAL C.	-	24 474	617.051	13.487	9.008	1,939	1.558	L	15,072	-		
_		_	-	-				2	1		두	A PR SUIT SEL	Your Bax SS-A	BASEBOARD		C00 DHG 85-A	Zone Max. 85-4	Floor	30023	E
₽,	w results presented.	Color (s)	EZDOE Floor	Floor	ZONE	System #1	System #2	System #3			ŧ	Bys. Ld Ann.	Monthly Demand	Zone 85-6	Max. Rate		Monthly Demand		Model	
•	-		FTMO+	-			1		OUTSIDE AIR	_	(ctm)	Tot. (MMBtu)	(MBBM)	IOC (MMBD)	-1	ı				1
J																				

System	magp	mmBh
Shar Boiler Diane Loads	1	5.394
The Course of th		
am Boiler Loads	-	878.0
ad Water Loads	7.7	
alian hards	-	29 074

5.5 Comparison of Modeling Results

5.5.1 General

The comparison of models for heating and cooling with the equipment lists in Section 3 is summarized in Tables 5.5.1.1 and 5.5.1.2

Table 5.5.1.1, Building 2700 - Heating/Reheat Model Comparisons

		Steam Mod	el	Heat Loss Model	EZDOE	Modeling	Results	Equip. I	List Connec	t Loads
	Heat	Reheat	Total	(Heating only)	MCA HW	Steam Units	Model Total	MCA HW	Steam Units	Total
Heating Load (mmBtu/hr or `mlb/hr)	7.5	1.2	8.7	8.7	5.7	3.1	8.8	5.7	5.2	10.9
Annual Heating (mmBtu or mlbs)	6,910	6,990	13,900	13,860	5,500	8,900	14,300			

Notes: 1) The Building 2700 Heating Peak for the steam model is estimated to be three (3) times the peak month average flow rate of 60 mlbs/day.

Table 5.5.1.1 shows that the Building 2700 combined heating and reheat loads are about 14,000 mmBtu or mlbs per year. The combined peak for Building 2700 is expected to be about 9 mmBtu/hr or 9,000 lb/hr. The peak capacity relates to about 85% the connected equipment loads.

In Table 5.5.1.2, the cooling load peak of 1,330 tons is found to be near 75% of the connected equipment loads. The EZDOE cooling load for the year totaled 35,400 mmBtu per year. The estimated kWh/yr for cooling is 2,950,000. This number will compared to values calculated in the electric model in Section 5.6

²⁾ During the heating season Building 2700 is estimated to require 85% of the steam model total of 8,130 mlbs for heating.

³⁾ For an explanation of why the heat loss annual heating is predicted high refer to Section 5.3.

⁴⁾ The steam model predicts the heat and reheat loads separately, while the EZDOE modeling lumps the two together in the "Steam" category units.

Table 5.5.1.2, Building 2700, Cooling Modeling Comparison

	EZDC	E Modeling	Results	Equip. I	ist Conne	ct Load
	MCA CHW	DX & Misc	Total	MCA CHW	DX & Misc	Total
Cooling Load Peak (tons)	640	690	1,330	663	1,134	1,797
Cooling Load Peak (mmBtu/hr)	7.7	8.2	15.9	8.0	13.6	21.6
Annual Cooling (mmBtu/yr)	7,700	29,100	36,800			

5.6 Electric Model - Building 2700

5.6.1 General

An electric model, as described in Section 2.5.5, has been developed by Entech for Building 2700. The model represents our estimation of the current operation of the building. The model is employed to approximate the contribution from all electrical users to an annual electric cost.

5.6.2 Results

The electric model culminated the modeling information provided in Section 3, 4, and 5. It defines a baseline for Building 2700's influence on the electric bills for the Hope Road/Charles Wood Area. Table 5.6.2.1 summarizes the results of the electric model. Table 5.6.2.2 is the electric model for the entire building.

Table 5.6.2.1, Electric Model Cost Summary

Location	Cost/yr
Basement HVAC	\$35,850
First/Mezzanine HVAC	\$91,000
Second Floor HVAC	\$84,470
Third Floor HVAC	\$98,820
Fourth Floor HVAC	\$173,300
Exhaust Fans	\$44,940
Chillers - Towers	\$74,850
Pumps	\$85,790
Misc. Refrigeration	\$8,420
Lighting	\$443,730
Misc. Equipment	\$302,790
Totals	\$1,443,960

The summary above in the Table 5.6.2.1 reflects that the lighting and miscellaneous equipment constitute approximately 52% of the total electrical yearly cost. The fourth floor is shown to have the highest electric cost. Based on the modeled area the of building the average cost per square foot is $$2.49 ($1,443,960 \div 580,000)$. It is important to realize that the electric model is an approximation of the electricity used by each load. It shows general relationships and gives a reasonable allocation of electrical demand, usage and cost.

FT. MONMO BUILDING 2700 ELECTRIC MOD

HVAC	Designatio -	Equip. Type AHU	Field Data/Reference/(Location)	Area	Field	Connected		Demand I
3	-:-		Data/Reference/(Location)					
				Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month kl
			McQuay LML(OA418 - JCALS)	Cafetena	McQuay ALP(Outside on grade)	493	12.3	24.7
		AC_	Camer 38(Cafetena - above ceiling)	Cafetena office	Carner 38(Location unknown)	51	13	2.5
		AC	Camer 38(Cafetena - above cailing) unknown(OA400)	Cafetena office	Carner 38(Location unknown)	5.1	1.3	2.5
		AHU	:unknown(Mech. Room (MR)-OA-1)	OA400 (J-CALS) OA415 offices	unknown (Outside on grade)	493	12 3	24 7
	·		Liebert(OA-413)	OA413 Onices	unknown(Outside on grade) Liebert(Outside on grade)	7.9	20	39
			Liebert(OA-334)	OA334		108	10 2	81
			C Liebert (OA-336)	OA336	Liebert(Outside on grade)	20 3 10 8	5 4	15.2
			Trane C C (OA403)	OA403 offices	Liebert(Outside on grade) Plant Chilled Water @ 55 degrees F	11	08	81
10			unknown(OA418 - JCALS offices)	OA403 Offices	Plant Chilled Water @ 55 degrees F	08	06	0.8
11			unknown(OA418 - JCALS offices)	OA418 (J-CALS)	Plant Chilled Water @ 55 degrees F	08	06	06
12			unknown(OA418 - JCALS offices)	OA418 (J-CALS)	Plant Chilled Water @ 55 degrees F	0.8	06	06
13			unknown(OA418 - JCALS offices)	OA418 (J-CALS)	Plant Chilled Water @ 55 degrees F	0.8	06	06
14			unknown(OA418 - JCALS offices)	OA418 (J-CALS)	Plant Chilled Water @ 55 degrees F	0.8	06	0.6
15		ÜH	iunknown(OA501-storage)	OA501	IN/A	0.03	0.022	0 011
16		UH	unknown(OA503-storage)	OA503	N/A	0.03	0.022	0 011
17		UH	unknown(OA321-hallway)	OA321	N/A	0 03	0.022	0 011
18		UH	unknown(OA326-Substations #2 & 6)	OA326	N/A	0 03	0 022	0 011
19		UH	unknown(OA328-Substations #2 & 6)	:OA328	N/A	0 03	0 022	0 011
20		FC	unknown(9 on West wall)	OA400 Area - West	Plant Chilled Water @ 55 degrees F	0.11	01	01
21	C-4		r unknown(Near Elevator #1 - Basement)	:Hallway - Elev #1	N/A	0 00	00	00
22	1	Fin-tube	unknown(625 ft of East/South wall)	JCALS/Cafetena/Lab	N/A	0 00	00	00
23	-	AHU	unknown(1B110 Comp Lab Mezz)	B110,112/Mezz	unknown (Outside on grade)	60	30	4.5
24		AHU	Atmostech(1B120 Cleanroom)	1B120 Cleanroom	Compressor in 1B120 & tower on roof	33.3	25 0	25 0
25		AHŪ	McQuay VSC(1B134 Print Shop)	1B134 Print Shop	Packaged unit w/tower on roof	44 6	11 1	22 3
26		AHU	iunknown(1B115)	1B115 office/storage	unknown (Outside on grade)	90	01	2.2
27		AHU	iunknown(1B115 - backup unit)	11B115 office/storage	unknown (Outside on grade)		0.0	00
28		AHU	:Trane BWV180(1B131 Computer Rm)	'1B131/Mezz	Trane BWA 180(Outside on grade)	15.1	3.8	7.6
29		AHU	Trane BWE120(1B131 Computer Rm)	1B131/Mezz.	Trane BWE 120(Outside on grade)	7.2	18	18
30		AHU	Trane BTE120(1B131 Computer Rm.)	1B131/Mezz	Trane BWA 120(Outside on grade)	5.6	14	14
31	-	AHU	Trane BTE120(1B131 Computer Rm.)	1B131/Mezz	Trane BWA 120(Outside on grade)		0.0	00
32		AHU	Trane BWE090(1B131 Computer Rm.)	18131/Mezz.	Trane BTA 090(Outside on grade)	-	0.0	0.0
33	AC-6	AHU	Camer(MR - 1B123)	I1B123	Compressor in 1B123 & tower on roof	4.1	1.0	20
34	I	AHU	Comfort Air(1B138)	1B138 Offices	Comfort Air(Outside on grade)	14 4	3.6	7.2
35	AC-1(New)	AHU	Dunham Bush(1B142)	1B142	Compressor in 1B142 & tower on roof	20.2	5.0	10.1
36	I	AHU	Chrysler 1005(1B141A)	1B141A	Compressor in 1B141A & tower on roof	64	1.6	3 2
37		UH	iunknown(Stairway #1)	Stairway #1	N/A	0.03	0.022	0.011
38	<u> </u>	UH	unknown(1B107 - storage)	[1B107	N/A	0 07	0.056	0.028
39		UH	unknown(1B109 - storage)	11B109	N/A	0.07	0 056	0.028
40		UH	runknown(1B111- storage)	1B111	N/A	0 07	0.056	0.028
41	<u> </u>	UH	iunknown (1B109 - storage)	I1B107	N/A	0.03	0.022	0 011
42		UH	iunknown (1B110 - shop)	I1B110	N/A	0.07	0 056	0.028
43		UH	lunknown(Stairway #3)	Stairway #3	N/A	0.03	0.022	0.011
44	C-4		unknown(Near Elevator #1 - First floor)	iHallway - Elev. #1	N/A	0.00	0.0	0.0
45	C-2(2)		runknown(1B4L ladies room)	I1B4L	N/A	0 00	0.0	00
46			unknown(420 ft of 1B100 Area))	Vanous	N/A	0.00	0.0	0.0
47		AHU	Carner 50(1B202 - Photography)	118202	unknown(Location unknown)	7.3	18	3 7
48		AHU	Trane SAHB(1B205 - EMS Room)	1B205	Trane(Outside on grade)	7.5	19	37
49	AHU-2		Trane C.C. (1B204)	1B204	Plant Chilled Water @ 55 degrees F	15	1.1	
50	ļi		Chrysler 1005(1B212)	I1B212	Compressor in 18212 & tower on roof	6.4	4.8	4.8
51	ļi		junknown (18212 - shop)	18212	N/A	0.07	0.056	0.028
52			unknown(200 ft of 1B200 Area))	Vanous 1B302	N/A	0.00	0.0	0.0
53 64			Camer 39(1B302 - offices)		Plant Chilled Water @ 55 degrees F	0.8	0.6	06
55			(Carrier 39(1B302 - offices)	1B302 1B306	Plant Chilled Water @ 55 degrees F	1.2	09	0.9
			Carner 39(1B306 - offices)	118306	Plant Chilled Water @ 55 degrees F	1.2	0.9	0.9
56 57					Plant Chilled Water @ 55 degrees F	1.2	0.9	09
			Trane C.C (1B322)	18318,18324, Entrance	Plant Chilled Water @ 55 degrees F	2.2	17	1.7
58			McQuay(!B332 - offices)	:1B332	Plant Chilled Water @ 55 degrees F	11	0.8	8.0
59			McQuay(!B332 - offices)	18332	Plant Chilled Water @ 55 degrees F	1.1	08	0.8
60			unknown(Stairway #4)	Stairway #4	N/A	0.02	0.017	0.008
61			iunknown(18307))	:1B307	N/A	0.11	0.084	0 042
62	UH-21		unknown(hallway near 18322)	ihaliway	N/A	0 04	0.028	0.014
63		UH	unknown(1B321 Receiving)	:1B321	N/A N/A	0.15	0 112	0.056
64			unknown(1B321 Receiving) :unknown(1B322- above ceiling)	11B321		0.15	0.112	0 056
65				I1B324 IStairway #6	Compressor in 1B322 & tower on roof	18.7	94	14.0
66	UH-23		unknown(Stairway #6)		N/A	0.02	0 017	0.008
67			unknown((6) Bldg 2706 & (1)Nit Stor Are			0.32	02	0.2
68			iunknown(1B6L ladies room)	11B6L	N/A	0.00	00	00
69			unknown(1B6G gentlemen room)	11B7G	N/A	0.00	0.0	0.0
70	FC-1(11)			vanous	Plant Chilled Water @ 55 degrees F	0 14	01	<u>01</u>
71			unknown(320 ft of 1B300 Area)	ivanous	N/A	0.00	0.0	00-
72	CUH-1(2)		unknown(New Entrance Area)	ientrance way	N/A	_0.02	0.02	0 02
73			Carner 39(1B401 - offices)	118401	Plant Chilled Water @ 55 degrees F	1.2	0.9	0.9
74			iTrane C C (1B405 - Library)	Library	Plant Chilled Water @ 55 degrees F	_ 21	15.	15.
75	احتا	AHU-MCA	Trane(above 1B416 - offices)	118416 area	Plant Chilled Water @ 55 degrees F	56	4.2	4.2.



FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - ALL FLOORS & BUILDING 2706 HVAC EQUIPMENT

TABLE 5.6.2.2

Marie			1	1 100		6		Winter Bill			Intermedia				ummer Bi			<u> </u>	
Descriptions Description	A	Cooling Equipment	Total	Winter	Intermed.					-Peak	Off-Peak			+			n-Peak	Damand	~
Missing Alfrication in greet)		1	1							kWh/Mo							. kWb/Wo		
Communication surveyses	0.700						0.7												-1111
Second Charlest an agent 46 32 27 37 1 1460 4 367 1 3691 4 5071 5 507 19	ice						†		4					+					
### Promotivation graphs ### 1 23 4 5 5 1 23 4 65 4 7 25 6 92 7 2 4 65 6 7 2 1 2 2 4 65 7 2 1 2 2 4 65 7 2 1 2 2 4 65 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 5 7 2 1 2 2 4 6 7 2 2 4 2 2 4 2 2 4 2 2 4 2 2 4 2 4 2 2 4 2 4 2 2 4	ice	Carner 38(Location unknown)	5 1		2.5	38		1 152	4	405	2 :	304		4		6	608		
Memory Cultimate on project 10 5 4 11 8 7 660 1,786 3 171 8 735 1,728 10 1105 51 120 10																			1
Meterin (Justice on present 70.0 10.2 15.2 15.2 1.2	35																		
Lepher(Chaine graphe) 10.8 6																			
Part Cheel Variety © 24 Septines 1			•											+					_ 1
Section Part Chemic Variety & Septem Part Chemic Variety	,,,		•																
SECONDO Part Cheek Water 6 20 segreps 7 05 05 05 05 05 05 05																			
MSD									8										
## Cheed Water © 50 ergress F ***Dead Common Cheed Commo	NLS)	Plant Chilled Water @ 55 degrees F	0.8	0.6	0.6	0.6					12 2	83		12	283	8	126	5	
NA.																			
WAA	NLS)		•																
NA.																			
MAX																			
MAX																			
Very Vis.										<u> </u>				4					
V. ET. NAM. 1. PROMIT (Lything on graph) 1. Promit (Lything on g		Plant Chilled Water @ 55 degrees F	0.11		0 1		1	2 40	8	18					40			1	
22		N/A												0					
Compression 1917/4 stower on pot 33 75 0 75												<u> </u>							
Packaged with witneser on mode 44 6 11 22 3 33 4 2 26 7 4 4 3 565 2 26 7 6 5 348 4 5 349 6 7,131 134 135 1																			₋
Participal Par														•					- t
Standard Standard									•										
Finale BWE 1/20/Cutsee on grades 72 1.8 1.8 3.0 1.217 2.269 2.433 3.30 2.433 4.578 14			-						0										
Finale BWA 120(Outsee on grades) 5 6		Trane BWA 180(Outside on grade)		38								15	6 1,8 15	4	1,815	8	2,421	45	1
Trans BMA 120(Outsoor ongrede)														2					
Trans BTA D98Q/Quisse on grade			5.6											2					;
Compressor m 18124 & Lower on roof 4.1 1.0 2.0 3.1 11, 22 4 326 2 244 4 326 4 488 6 489 14 48 2.0 488 4 41, 52 48 5 47, 52 52 52 52 52 53 53 53		Trane BTA 000/Outside on grade)																	
Confront Alf-Quistede on graded 14.4 3.6 7.2 10.8 1 43.2 2 864 4 1,152 4 1,728 6 1,728 43 43 Congressor in 18142 A Lower on root 6.4 1.6 3.7 4.8 1 193 4 511 2 1,210 4 1,611 4 2,400 6 2,400 60 60 60 60 60 60 60			41																
Compressor m 18142 & lower on roof 202 50 10 151 1, 605 4 1613 2 1210 4 1613 4 7210 6 2,420 60 2,420 60 Compressor m 18141 & lower on roof 64 16 32 4 8 11 153 4 511 2 348 1 4 771 19 N/A	5																		
NAA		Compressor in 1B142 & tower on roof	20.2	5.0	10 1	15 1			4										
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Introduction unknown)																			
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Plant Chiled Water @ 55 degrees F 1.5							-												'
Compressor in 18212 & tower on roof 64 48 48 48 8 1,543 10 1,286 4 771 10 1,286 4 771 10 1,286 39							1.							12					:
NA			64	48	4.8	48		3 1,54 3	10	1,286		71 10						39	
Plant Chilled Water @ 55 degrees F 0.8 0.6 0.6 0.6 0.6 12 300 8 133 12 300 8 133 12 300 8 133 5													9				1		
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Entrance Plant Chilled Water @ 55 degrees F 2.2 1.7 1.7 1.7 1.7 1.7 1.2 806 8 358 12 806 8 358 12 806 8 358 13																			:
Plant Chilled Water @ 55 degrees F 1.1 0.8 0.8 0.8 1.2 403 8 179 12 403 8 179 12 403 8 179 7			2.2	1.7	1.7		1:	2 80 6	8	3 58		36 8						13 :	~~· (
N/A			11						В_					12	403	8		7	
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N/A 0.04 0.028 0.014 0.0 10 11 8 6 8 9 6 4 0.5 1 0.5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0																		0	
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Compressor in 1B322 & tower on roof 18 7																			
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NITROGEN Stora IN/A NIVA 0.00 0.00 0.00 0.00 0.00 1 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										4	8	5 6	3						
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Plant Chilled Water @ 55 degrees F 0 14 0 1 0 1 0 1 12 49 8 22 12 49 8 22 12 49 8 22 1												···•	0						
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Plant Chiled Water @ 55 degrees F 2 1 1.5 1.5 1.5 1.5 1.739 8 328 12 739 8 739 8 739 8 328 12 739 8 328 12 739 8 328 12 73										187			187						:
																+			· · ·
			56	4.2		4.2	12	2,012	8	894		12 8							1€



OF THE ARMY JUILDING 2706 HVAC EQUIPMENT

	mediate B		Months n-Peak		ummer Bi -Peak		onths n-Peak	<u> </u>	Non-S	Summer			Sum	mer		Annual	7
hrs/		hrs/	14.05	hrs/		hrs/		Demand	Off-Peak	On-Peak	Cost		Off-Peak	On-Peak	Cost	Cost	1
day	kWh/Mo		kWh/Mo		kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.	_ \$	\$	No.
2	2,961		4 3.947	4			5,921 608	148 15	17.764 1,823	31.580 3,240	\$4,624 \$474	148 15	23,685 2,430	23 685 2,430	\$4,563	\$9 18£	·
	304		4 405 4 405	4		6	608	15	1.823	3,240	\$474	15	2,430	2,430	\$468 \$468	\$943 \$943	
2			4 3,947	4		6	5,921	148	17,764	31,580	\$4,624	148	23,685	23.685	\$4.563	\$9.186	
2			4 630	4		6	945	24	2,834	5,037	\$738	24	3,778	3,778	\$728	\$1.465	
3	974		B 1,731	4	1,298	10	2,163	54	6,490	12,115	\$1,731	32	5,192	8.654	\$1,251	\$2,982	
3	1,830		8 3,253	4		10	4,066	102	12,197	22,768	\$3,253	61	9,758	16,263	\$2,351	\$5.604	
3	974		B 1,731	4	1,298	10	2,163	54	6,490	12,115	\$1,731	32	5,192	8,654	\$1,251	\$2,982	
12	405		B 180	12		8	180	7	3,243	1,442	\$363	3.	1,622	721	\$185	\$548	ļ
12	283			12		8	126 126	5	2,267 2,267	1,007 1,007	\$254 \$254		1,133 1,133	504 504	\$129	\$383	1
12 12	283 283			12	283 283	8	126	5	2,267	1,007	\$254		1,133	504	\$129 \$129	\$383 \$383	1 1
12	283			12	283	8	126	5	2,267	1,007	\$254	2	1,133	504	\$129	\$383	1
12	283	`		12	283	8	126	5	2,267	1,007	\$254	2	1,133	504	\$129	\$383	1
8	7	€		0.5	0	0.5	0	0	64	33	\$8	0	2	1	\$1	\$9	1
8	7	£	5 4	0.5	0	0.5	0	0	64	3 3	\$8	0	2	1	\$1	\$9	1
8	. 7			0.5	0 :	0.5	0	0	64	33	\$8	0.	2	1	<u>\$1</u>	\$9	11
8	. 7	6		0.5	0_	0.5	0	0	64	33		<u>.</u>			\$1	\$9	11
8	7			0.5	0	0.5	0	0.	322	33	\$8 \$36	0	2.,		\$1	59	_1
12	40			12	40	<u>8</u> .	18		0	143	\$0			72	\$18 \$0	\$54	
- 0				- 0		0	0	0	0	<u>;</u>	\$0		0	·	3 0	\$ 0 \$ 0	2
3	540			4	721	10	1,201	30	3 , 6 03	6,726	\$961	18	2.883	4,804	\$695	\$1,656	2
8	7,999			8	7,999	10	6,666	200	63,99 5	42.664	\$8,744	100	31,998	26,665	\$4,856	\$13,600	7
2	2.674	6	5,348	4	5,348	8	7,131	134	21,393	35 .655	\$5,026	134	21,393	28,524	\$4 ,638	\$9 6 64	2
2	539	2		4	1,077	6	1,077	9	3,231	2,154	\$43 6	14	4,308	4,308	\$714	\$1,150	2
0	0	0		0	0:	<u> </u>	0 424	0.	0 10 203	42 402	\$0	0	7.000	0	\$0	\$ 0	2
<u>4</u>	1,815	6		- 4	1,815 433	8	2,421 578	45 14	10,893 2,600	12,103 2,889	\$1,933 \$491	45 14	7,262 1,733	9,683 2,311	\$1,574 \$409	\$3,507	2
2	433 338	$\frac{3}{3}$		2	338 :	4	450	11	2,027	2,252	\$383	11	1,351	1,802	\$319	\$900 \$702	$-\frac{2}{3}$
0	330	0		0	0	- 7	0	0	0	0	\$0	<u>'</u>	0	1,002	\$0	\$0	-
0	0	0		0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	3
2	244	4	326	4	489	6	48 9	12	1,466	2,607	\$382	12	1,955	1,955	\$377	\$758	3
2	8 64	4		4	1,728	6	1,728	43	5,183	9,215	\$1,349	43	6,911	6,911	\$1,331	\$2,681	3
		4		4.	2.420	6	2,420	60	7,259	12,904	\$1,889	60 .	9.67B	9,678	\$1,864	\$3,754	3
2	386	4		4.	771	0.5	771		2,314 64	<u>4,114</u> 33	\$602 \$8	19.	3,085	3,085	\$594	". \$1 ,197	3
<u>8</u> _	18	6		05	0	0.5			161	84	\$19	<u>6</u> .	≰. ⊷		\$1 \$3	\$9 \$21	3
8	18	- 6		0.5	1	0.5		0	161	84	\$19	0	4		\$3	\$21	3
8	18	6		0.5	1	0.5	1	0	161	84	\$19	0	4	3	\$3	\$21	4
- 8	7 .	6		0.5	0	0.5	0	0	64	33	\$8	0	2	1	\$1	\$9	4
8	18	6		0.5		0.5		0	161	84	\$19	0.	- · <u>-4</u> -	3.	\$3	\$21	4
-8	7	6		05	0 !	0.5	0	0	64	33 0	\$8	0			<u>\$1</u>	\$9	4
0:	0.	- 0		<u>0</u>	0			0:	0;		\$0 \$0	0	<u>o</u>		\$0 \$0	\$0 \$0	4
0		- 0		- 0	0;		0	0	0	0	\$0	0			\$0	\$ 0	4
2	439	4		4	879	6	879	22	2,636	4,687	\$686	. 22	3,515	3,515	\$677	\$1,363	4
2	449	4		4	899	6	899	22	2,696	4,793	\$702	22	3 ,595	3,595	\$693	\$1.394	4
12	537	8		12	537	8	239	9	4,297	1.910	\$481	4	2,148	955	\$245	\$726	4
4.	771	10		4.	771	10	1,286	39	9,256	10,285	\$1,642	19.	3,085	5,142	\$743	\$2,386	5
8	18	6		05	1	0.5	1	0	161	<u>84</u> 0	\$19	0	4_	3	\$3	\$2 1	5
12	300	<u>0</u>		12	300	8	133	5	2,399	1,066	\$0 \$268	- 0	1,199	533	\$137	\$0	6
12	420	8		12:	420	- 8	187	 7	3,358	1,493	\$376	3	1,679	746	\$191	\$405 \$567	
12	420	8		12	420	8	187	7	3,358	1,493	\$376	3	1,679	746	\$191	\$567	5
12	420	8		12	420	8	187	7	3,358	1,493	\$376	3	1,679	746	\$191	\$567	5
12	806	8	358	12	806	8	358	13	6,445	2.865	\$721	7.	3,223	1,432	\$367	\$1,089	5
12	403	- 8	179	12	403	. 8	179	7	3,22 3	1,432	\$361	3	1,611	716	\$184	\$544	5
12	403	8	179	12	403	8	179		3,223	1,432	\$361	3	1,611	716	\$184	\$544	5
8	5	6	3	0.5	0:	0.5		0.	48 242	25	\$6	0			\$1	\$6	6
- 8 -		<u>6</u>	13	0.5	2	0.5	- 1	1	81	125 42	\$28 \$9	0	<u>7</u>	4	- \$4	\$32	6
-8-	36	- 6	18	0.5	<u>1</u>	0.5		1	322	167	\$38	0.	9	6	\$1 \$5	\$11 \$43	6
8	36	- 6	18	0.5	2	0.5		1	322	167	\$38	- 0+		6	\$5	\$43	- 6
	1,686	8	2,997	4	2.247	10	3,746	94	11,237	20,976	\$2,997	56	8,990	14,983	\$2,166	\$5,163	6
3	5	6	3	0.5	0	0.5	0	0	48	25	\$ 6	0	1	1	\$1	\$6	- 6
3 8		6	38	0	0	0	0	2	761	355	\$89	0	0	0	\$0	\$89	6
8	76		1	0	0	0	0	0	<u> </u>	0_	\$0	0	0	0	\$0	\$0	6
8 8 0	0	0	0					0.	0	0	\$0	0	0	0			
8 8 0	0	0	0	0	0	0.	0							0	\$0	\$0	
8 8 0 0	0 0 49	0 0 8	0 22	0 12	4 9	8	22	1.	394	175	\$44	0	197	88	\$22	\$67	7
8 8 0 0 12 0	0 0 49 0	0 0 8 0	0 22 0	0 12 0	49 0	8	22 0	1.0	394 0	175 0	\$44 \$0	0	19 7 0	8 8	\$22 \$0	\$67 \$0	7 7
8 8 0 0 12 0 4	0 0 49 0 3	0 0 8 0 4	0 22 0 2	0 12 0	49 0	8 0 0	22 0 0	1.	394 0 48	175 0 24	\$44 \$0 \$6	0 0 0	197 0 0	88 0 0	\$22 \$0 \$0	\$67 \$0 \$6	7 7 7
8 8 0 0 12 0	0 0 49 0	0 0 8 0	0 22 0	0 12 0	49 0	8	22 0	1 0 0	394 0	175 0	\$44 \$0	0	19 7 0	8 8	\$22 \$0	\$67 \$0	6 7 7 7 7

FT. MOI BUILDING 2700 ELECTRIC N

			Airside Equipment - General Inform		Cooling Equipment	Total	Winter	intern
	Design/Site		Field	Area	Field	Connected		Dema
	Designatio	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)		kW/mc
76		Recirc AC Lieber	above 1B416 - offices)	18500 area	Plant Chilled Water @ 55 degrees F	56	42	•
77 78	- : - -	Recirc AC Lieber		-OA413 -OA413	Liebert(Outside on grade)	108	54	
79			wn(Stairway #7)	*** *** *** * * * * * * * * * * * * * *	Liebert(Outside on grade) N/A	10 8	0 028	
80			wn(Stairway #1)	.Stairway #7 iStairway #11	N/A	0 02	0 0 17	0
81	C-4		wn(Near Elevator #7 - First floor)	Hallway - Elev. #7	N/A	0 00	000	
82	FC-1(11)		wn(18405 - Library)		Plant Chilled Water @ 55 degrees F	0 14	01	
83	FU-1(11)		wn(360 ft of 1B400 & 500 Areas)	ruanous	N/A	0 00	00	
84			above 1B109 - Computer Area)	Mezz Computer Area	I rane(Outside on grade)	12 1	60	
85	·		(above 1B109 - Computer Area)	Mezz Computer Area	Liebert(Outside on grade)	10 8	54	
	CUH-1(2)		wn(Main Lobby Entrance Area)	Mezz entrance way	N/A	0 02	0 02	
87	AHU-1		wn(above Main Lobby)	Mezz Lobby Area	Plant Chilled Water @ 55 degrees F	3 4	2.5	• • • • • • • • • • • • • • • • • • • •
88	<u></u>		wn(1B120 on floor)	Build Mgr office/Mezz	Plant Chilled Water @ 55 degrees F	02	02	•
89			ay LSL(Auditonum M-Area)	Auditonum	McQuay AHR(Common - out on grade)	27 0	68	
90			ay LSL(Auditonum M-Area)	Auditonum	McQuay AHR(Common - out on grade)	27 0	68	
91	AC-1		wn(MR - 1aB138/Mezz.)	11aB138 Mezz Area	Compressor in 1B123 & tower on roof	187	47	
92	FC-1(5)		wn(1aB324/Mezz)	11aB138 Mezz Area		0 07	01	
			wn(250 ft of 1aB100 Areas)		Plant Chilled Water @ 55 degrees F	0 00		
93	AC 2		wn(MR - 21 South 2C/D100 Area)	2D110 offices	N/A		00	
94	AC-2			2D110 offices	Compressor in MR-21 & tower on roof	18 7	47	
95	AUU 24		2D106/Computer room) C C (MR - 21-A South 2C/D100 Area	20106	Liebert Unit in 2D106 & tower on roof	67	34	
96					Plant Chilled Water @ 55 degrees F	97	73	
97	AC-3 AHU-2-2		wn(MR - 22 North 2C/D100 Area) C.C.(MR - 22-A North 2C/D100 Area	2D130 electronics lab	Compressor in MR-21 & tower on roof	28 2	7 1 5 9	
98	Anu-z-z		Bire(located on roof)		Plant Chilled Water @ 55 degrees F	7 8		
99				2D140 Dryroom	Cargo Packaged AHU/AC cond on roof	44 5	22.3	
100	FC 1/70		wn(MR-22 North 2C/D100 Area)	20204 lab area	Packaged Unit in MR-22 & tower on roof	29 7	7 4	
101	FC-1(78)		wn(78 in 2C/D100 area) wn(Near Elevator #1 - Second floor)	2C/D100 perimeter areas	Plant Chilled Water @ 55 degrees F	10	0.7	
102	C_4			Hallway - Elev. #1	N/A	0 00	0.0	
103	AHU-2-3		39LV(MR-23 East 2C/D200 Area)	:2D210 lab area	Compressor in MR-23 & condenser on r	20 5	51	
104			C.C (MR-23 East 2C/D200 Area)	2C/D200/300 offices/comidor		14 9	11 2	
105	FC-1(35)		wn(35 in 2C/D200 area)	2C/D200 penmeter areas	Plant Chilled Water @ 55 degrees F	0 4	0.3	
106	AC-14		wn(MR - 23 East 2C/D200 Area)	2D306 lab area	Compressor in MR-23 & tower on roof	38 7	19 4	
107			wn(2D310 Cleanroom)	2D310 Cleanroom	Pack. Camer Air Cooled Chiller on roof	22 4	11 2	
108			SWUB(2C325)	12C325	Packaged Unit in 2C325 & tower on roof	9.8	2 4	
109			er(2D330)	2D330 area	Compressor in 20330 & cond. on roof	25 0	6.2	,
110			(2D335/Computer room)	12D335	Liebert Unit in 2D332 & tower on roof	67	3 4	
111			vay Pkg Unit(2D337)	2D337	Packaged Unit in 2D337 & tower on roof	26	0.7	
112			C C (MR-24 East 2C/D300 Area)	2C/D300 offices/comdors	Plant Chilled Water @ 55 degrees F	7.8	5 9	
113	FC-1(83)		vn(83 in 2C/D300 area)	2C/D300 perimeter areas	Plant Chilled Water @ 55 degrees F	10	0.8	
_114			C.C (MR-24 East 2C/D300 Area)	2C/D400 offices/comdors	Plant Chilled Water @ 55 degrees F	48	3.6	
115			2C405/Computer room)	12C405	Datac Unit in 2C405 & tower on roof	6.3	3 2	
116			2C407/Computer room)	2C407	Datac Unit in 2C407 & tower on roof	6.3	3.2	
117	FC-1(41)		vn(41 in 2C/D400 area)	2C/D400 penmeter areas	Plant Chilled Water @ 55 degrees F	0.5	04	
118			C.C.(MR-25 South 2C/D400 Area)	2C/D400 offices/comdors	PCW @ 55F-Comp. in MR25/tower on r	48	3.6	
119			C.C.(MR-25 South 2C/D400 Area)	2C/D400/500 offices/comdor		26	20	
120	FC-1(19) C-5		vn(19 in 2C/D500 area)	2C/D500 permeter areas	Plant Chilled Water @ 55 degrees F	0.2	0.2	
_			vn(Near Elevator #7 - Second floor) C.C (MR-31 South 3C/D100 Area)	Hallway - Elev #7		7 1	00	
122				3C/D100 offices/comdors	Plant Chilled Water @ 55 degrees F		53	
123	AHU-3-1A		C.C (MR-31 South 3C/D100 Area) and WZW(3D114)	3C/D100 offices/comdors 3D114 area	Plant Chilled Water @ 55 degrees F Compressor in 3D114 & tower on roof	149	36	
	AHU-3-2							
125			C.C.(MR-32 North 3C/D100 Area) C.C (MR-32 North 3C/D100 Area)	3C/D100 offices/comdors 3C/D100/200 offices/comdor	Plant Chilled Water @ 55 degrees F	7.5 6.7	56	
127				3C141	Plant Chilled Water @ 55 degrees F Trane Unit in 3C141 & condenser on roo	93	5 0 2.3	
128				I3C141	Liebert Unit in 2C407 & tower on roof	86	43	
129	FC-1(95)			3C/D100 penmeter areas	Plant Chilled Water @ 55 degrees F	1.2	09	
130	C-5			Hallway - Elev. #1	N/A	0 00	0.0	
131	— <u>~</u> ;~—		IR - 33 East 3C/D200 Area)	3D306-3C321 lab area	York Comp. in MR-33 & condenser on r	56 4	14 1	
132				i3D314 - 3C321 lab area	Trane Chiller in MR23 & condenser on r	16.0	4.0	
133	AHU-3-3		C.C (MR-33 East 3C/D200/300 Area)			14.9	11.2	
134	FC-1(35)		vn(35 in 3C/D200 area)	3C/D200 perimeter areas	Plant Chilled Water @ 55 degrees F	04		
135	0-1(33)		ol(MR-34 South 3C/D300 Area)	3D330 Cleanroom	Climatrol Chiller in MR34 & cond. on roo	73 6	03 368	
136	AHU-3-4		C.C (MR-34 South 3C/D300/400 Are			7.5	56	
137	FC-1(83)		vn(83 in 3C/D300 area)	:3C/D300/400 offices/comdor	Plant Chilled Water @ 55 degrees F	1.0	08	
			(3D402/Computer room)	3D402				
138			(3D402/Computer room)	I3D402	Liebert(located on roof)	10 8	54	
139			(3D402/Computer room)		Liebert(located on roof)	10.8	27	
140				I3D404	Liebert(located on roof)	16 6	83	
141			(3D406/Computer room)	3D406	Liebert(located on roof)	10.8	54.	
142			(3D406/Computer room)	I3D406	Liebert(located on roof)	10 8	27	
143			(3D409/Computer room)	3D409	Liebert(located on roof)	14 9	75	
144			(3D410/Computer room)	3D410	Liebert(located on roof)	16 6	83	
145			(3D412/Computer room)	I3D412	Liebert(located on roof)	23_1	11.6	
146			(3D412/Computer room)	3D412	Liebert(located on roof)	23 1	5 8	
147	FC-1(40)		vn(40 in 3C/D400 area)	3C/D400 penmeter areas	Plant Chilled Water @ 55 degrees F	0.5	0.4	
148			C.C (MR-35 South 3C/D400 Area)	3C/D400 offices/comdors	Plant Chilled Water @ 55 degrees F	7 8	5 9	
149	AHU-3-5A		C.C (MR-35 South 3C/D400 Area)		Plant Chilled Water @ 55 degrees F	2 1	1.5	
150	FC-1(19)	FC junknov	vn(19 in 3C/D500 area)	3C/D500 permeter areas	Plant Chilled Water @ 55 degrees F	0.2	0 2	
				Hallway - Elev. #7	N/A	0.00	0.0	

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - ALL FLOORS & BUILDING 2706 HVAC EQUIPMENT

TABLE 5.6.2.2

	Cooling Equipment	Total	Winter	Intermed.	Summer		Vinter Billir f-Peak	on Months On-Peak		rmediate E f-Peak		Months -Peak		ummer Bi -Peak		onths n-Peak		Non-Su
	Field	Connected	Demand	Demand	Demand	hrs/		hrs/	hrs/		hrs/		hrs/		hrs/		Demand	Off-Peak
	Plant Chilled Water @ 55 degrees F	Load (kW) 56	kW/month 4.2	kW/month 4.2	kW/month 4 2	day 12		8 894		kWh/Mo 2,012	day 8	kWh/Mo 894	day 12	kWh/Mo 2,012	_day 8	kWh/Mo 894	kW/Yr. 34	16,092
	Liebert(Outside on grade)	10 8	54	8 1	81		649	6 1,298			8		4		10		54	6,490
	Liebert(Outside on grade)	108	27	5.4	5 4		3 25	4 865	,		4		4		6		32	3,894
	N/A	0.04	0.028 0.017	0.008	0.0	10		8 6			6		05		0.5	0	0	81 48
	N/A	0.00	0.011	0.00	0.0		0	0 0			0		0		0.5		0	0
	Plant Chilled Water @ 55 degrees F	0 14	01	01	0 1	12		8 22			8		12		8		1	394
	N/A Trane(Outside on grade)	12 1	0 0	91	91		724	0 0 6 1,449			0 8		0		10		60	7,243
	Liebert(Outside on grade)	10.8	5.4	81	8.1	:	649	6 1,298			<u>8</u>		4		10		54	6.490
	N/A	0.02	0.02	0 02	0.02	12	9	8 4	8		6		0		0	0	0	60
	Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	3.4 0.2	02	25 02	0.2	- 12 12		8 537 8 38	12		8	537 38	12		8	537 38	20	9,668 689
*	McQuay AHR(Common - out on grade)	27.0	68	13.5	20.3			4 2,162			<u>6</u>		<u>12</u>		B		81	16,214
	McQuay AHR(Common - out on grade)	27 0	6.8	13 5	20.3	2	1.621	4 2,162		2,432	6	3,243	4	3,243	8	4,324	81	16,214
	Compressor in 18123 & tower on roof	18 7 0 07	47	93	14.0	1		4 1,492	2		4	1,492	4	2,238	. 6		56	6,714 215
	Plant Chilled Water @ 55 degrees F	0 00	01	01	00	12		8 12 0 0			8	12	12 0		<u>8</u>	12		0
	Compressor in MR-21 & tower on roof	18 7	4 7	93	14.0	1	5 60	4 1,492			4	1,492	4		6	2,238	5 6	6.714
	Liebert Unit in 2D106 & tower on roof	67	34	5.0	5.0	2	403	6 806	3		8	1,074	4	806	10	1,343	34	4,028
1015	Plant Chilled Water @ 55 degrees F Compressor in MR-21 & tower on roof	9 7 28 2	73	73	7.3 21.2	4	1,164 846	8 1.552 4 2.257	4		8 4	1,552 2,257	4	1,164 3,386	<u>8</u>	1,552 3,386	58 85	9,310
tors	Plant Chilled Water @ 55 degrees F	7.8	5.9	5.9	5.9		2.820	8 1,253	12	2.820	8	1,253	12	2,820	8	1,253	47	22.559
	Cargo Packaged AHU/AC cond. on roof	44 5	22.3	33 4	33 4	2	2,670	6 5,340	3		8		4	5,340	10	8,900	223	26.701
eas	Packaged Unit in MR-22 & tower on roof Plant Chilled Water @ 55 degrees F	29 7 1 0	74	14.9	22 3	1 12	892 349	4 2,380 8 155	12		4 8	2.380 155	4 12	3,569 349	<u>6</u>	3,569 155	89 6	10.708 2.793
	N/A	0 00	00	0.0	0.0	1		0 0	0		0	0	0	0	0	0	0	0.
	Compressor in MR-23 & condenser on r	20 5	5 1	10 3	15 4	1	616	4 1,643	2		4	1,643	4	2,464	6	2,464	62	7,393
	Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	149	11.2 0.3	11.2	11.2 0.3	<u>12</u>		8 2,387 8 70	12		8 8	2,387 70	12	5,371 157	8	2,387 70	90	42.970 1,253
	Compressor in MR-23 & tower on roof	38 7	19 4	29.0	29.0	2	2,322	6 4,645	3		8		4		10	7,741	194	23,223
	Pack Carner Air Cooled Chiller on roof	22 4	11.2	16 8	16.8	2	1,347	6 2,693	3		8	3,591	4		10	4,489	112	13,466
	Packaged Unit in 2C325 & tower on roof Compressor in 2D330 & cond. on roof	9 8 25 0	6.2	12 5	7.3	1	293 749	4 781 4 1,998	$\frac{2}{2}$	586 1,499	4	781 1, 9 98	4	1,171 2,997	<u>6</u>	1,171 2,997	29 75	3,514 8,992
	Liebert Unit in 2D332 & tower on roof	67	3 4	5.0	5 0		403	6 806	3		8		4	806	10	1,343	34	4,028
	Packaged Unit in 2D337 & tower on roof	2.6	0.7	13	2.0	1	78	4 208	2	156	4	208	4		6	313	8	938
	Plant Chilled Water @ 55 degrees F Plant Chilled Water @ 55 degrees F	78	59	5 9 0 8	5.9 0.8	· 4 12	940 372	8 1,253 8 165	12	940 372	8	1,253 165	12	940 372	8 8	1,253 165	47	7,520 2,972
	Plant Chilled Water @ 55 degrees F	48	3.6	3.6	3.6	4	582	8 776	4	582	<u>8</u>	776	4		8	776	29	4,655
	Datac Unit in 2C405 & tower on roof	63	3.2	48	4 8	2	380	6 :761	3	571	8	1,015	4	761	10	1,268	32	3,805
	Datac Unit in 2C407 & tower on roof Plant Chilled Water @ 55 degrees F	63	$\frac{32}{04}$.	48	48	;2 12	380 184	6	12	571 184	8 8	1,015 B2	12	761	10 8	1,268 82	32	3,805 1,468
10rs	PCW @ 55F-Comp. in MR25/tower on r	48	3.6	36	36	12	1,746	8 776	12	1,746	8	776	12	1,746	8	776	29	13,965
	Plant Chilled Water @ 55 degrees F	2 6 0.2	2 0 0.2	<u>2 0</u>	2 0 0 2	12		8 418 8 38	12	940	8	418	12	940	8	418 38	16	7,520 680
	Plant Chilled Water @ 55 degrees F	0.00	0.2	0.2	00	12	· 85	8 38 0 0	12	85 0	- B	38	12	<u>85</u>	<u>8</u>	- 30	0	0
	Plant Chilled Water @ 55 degrees F	7.1	53	53	53	12		8 1,134	12	2,551	8	1.134	12	2,551	8	1,134	43	20.411
	Plant Chilled Water @ 55 degrees F Compressor in 3D114 & tower on roof	4 8 14 9	36	<u>36</u>	3.6 11.2	12	1,746 446	8 776 4 1,190	12	1,746 892	8	776 1,190	12	1,746	<u>8</u>	776 1,785	29 45	13,965 5,354
	Plant Chilled Water @ 55 degrees F	7.5	5.6	56	56	12		8 1,190 8 1,194	12	2,686	4 8	1,190	12	2,686	- 8	1,785	45	21,485
	Plant Chilled Water @ 55 degrees F	6 7	5.0	5.0	5.0	12	2,417	8 1,074	12	2,417	8	1,074	12	2,417	8	1,074	40	19,336
	rane Unit in 3C141 & condenser on roc sebert Unit in 2C407 & tower on roof	93 86	2.3 4.3	64	7.0 6.4	1	280 515	4 746 6 1,029	2	<u>560</u> 772	- 4 8	746 1,373	- 4	1,119 1,029	10	1,119 1,716	28 43	3,357 5,147
eas F	Plant Chilled Water @ 55 degrees F	1.2	0.9	0.9	0.9	12		8 189	12	425	- 8	189	12	425	8	189	7	3,402
	VA	0.00	0.0	0 .0	0.0	1	0	0 0	0	0	0	0	0	0	0	0	0	0
	ronk Comp. in MR-33 & condenser on r	56 4 16 0	4.0	28 2 8 0	42.3 12.0	1	1,692 480	4 4,513 4 1,281	2	3,385 961	4	4,513 1,281	4		6	6,769 1,922	169 	20,307 5,765
	Plant Chilled Water @ 55 degrees F	14 9	11.2	11.2	11.2	4	1,790	8 2,387	4	1,790	8	2,387		1,790	8	2,387	90	14,323
	Plant Chilled Water @ 55 degrees F	0.4	03	03	0.3	12		8 70	12	157	8	70	12	157	8	70	3	1.253
	Plant Chiller in MR34 & cond. on roo Plant Chilled Water @ 55 degrees F	73.6	36.8 5.6	55.2 5.6	55.2 5.6	2		6 8,835 8 1,194	3	6,62 6 89 5	8	11,780 1,194	4	8,835 895	10	14,725 1,194	368 45	44,175 7,162
	Plant Chilled Water @ 55 degrees F	10	0.8	0.8	08	12	372	8 165	12	372	8	165	12	372	8	165	6	2,972
	ebert(located on roof)	10.8	54	B 1	81	2	6 49	6 1,29 8	3	974	8	1,731	4	1,298	10	2,163	54	6.490
	rebert(located on roof)	10 8 16 6	2.7 8.3	5 4 12 4	8.1 12.4	<u>1</u>	325 996	4 865 6 1,992	2		4 	2.656	-4	1,298	10	1,298 3,320	32 83	3,894 9,959
	rebert(located on roof)	108	54	81	B 1		649	6 1,298	3		8	1,731	4	1,992	10	2,163	54	6,490
	lebert(located on roof)	108	2 7	54	8 1	1	32 5	4 865	2	649	4	865	4	1,298	6	1,298	32	3.894
	ebert(located on roof)	14 9 16 6	7.5 8.3	11.2	11.2	2 2	895 996	6 1,790 6 1,992	3	1,343 1,494	<u>8</u>	2,387 2.656	4.	1,790	10	2,984 3.320	75 83	8,952 9,959
H.	rebert(located on roof)	23 1	116	17 3	17 3	<u>{2</u>	1,388	6 2,775	3		8		4	1,992 2,775	10	4,625	116	13,876
	ebert(located on roof)	23 1	5.8	11 6	17.3	1	694	4 1,850	2	1,388	4	1.850	4	2,775	6	2,775	69	8.32 5
	Plant Chilled Water @ 55 degrees F	0.5	5 9	0 4 5 9	04	12	179	8 80	12	179	8	80	12	179	8	1 253	3	7,520
	Plant Chilled Water @ 55 degrees F	7.8	15	15	_ 50 15	4	940 246	8 1,253 8 328	4	940 246	8 8	1,253 328	4	940 : 246	8	1,253 328	12	7,520 1,969
eas P	lant Chilled Water @ 55 degrees F	0.2	0.2	0.2	0.2	12	85	8 38	12	85	- 8	38	12	85	8	38	1	680
	VA	0 00	00	00	0.0	0	0	0 0	0	0	0	0	0	0 :	0	0	0	0



NT OF THE ARMY & BUILDING 2706 HVAC EQUIPMENT

hs		rmediate B				ummer Bi				Non C			,					
,eak	hrs/	f-Peak	On hrs/	-Peak	pur/	-Peak	hrs/	n-Peak	Demand	Off-Peak	On-Peak	Cost	Demand	Sum Off-Peak	mer On-Peak	Cost	Annual Cost	i
⟨Wh/Mo		kWh/Mo		kWh/Mo	day	kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	S	No.
894	12		8		12	2,012	8		34	16,092	7,152	\$1,801	17	8,046	3 576	\$9.	\$2.718	76
1,298	3		8		4		10		54	6,490	12,115	\$1,731	32	5,192	8 654	\$1,251	\$2 ,982	77
865 6	2 8		- <u>4</u>	865	0.5	1.298	0.5	1, 2 98	32	3,894	6,923 42	\$1,014 \$ 9		5.192	5.192	\$ 901	\$1,914	78
			- 6		0.5		0.5		0	48	25	\$6	1 0 -			\$1 \$1	\$11 \$6	79 80
0	1 0		 ö		0.0	0.	0.0	0	0	0	. 0	\$0	0	0		\$0	\$0	81
22	12	49	8	22	12	49	8	22	1	394	175	\$44	0	197	98	\$22	\$67	82
0	0		0		0	0 ·	0	0	0	0	12.500	\$0	0	0	0	\$0	\$0	83
1,449 1,298	3		8	1,931	4	1,449	10 10	2,414 2,163	60 54	. 7,243 6,490	13,520 12,115	\$1,932 \$1,731	36.	5,794 5,192	9,657 8,654	\$1,390 \$1,251	\$3,328	84
4	8		- 6	3		0	— , ,	0	0	60	28	\$7	0	3,13,	0,034	\$1,231	\$2,982 \$8	_85 86
537	12		В	537	12	1,209	8	537	20	9,6 68	4,297	\$1,082	10	4,834	2.148	\$551	\$1,633	87
38	12		8	38		86	8	38	1	689	306	\$77	1.	345	153	\$39	\$116	88
2,162 2,162	3		<u>6</u>	3,243 3,243	4	3,243 3,243	8	4,324	81 81	16,214 16,214	21,619 21,619	\$3,250 \$3,250	81 81	12,972 12,972	17,295	\$2,812	\$6,06 2	89
1,492	2	1,119	4	1,492		2,238	. 6	2,238	56	6,714	11,936	\$1,748		8,952	17.295 8.952	\$2,812 \$1,725	\$6,062 \$3,472	90
12	12	27	8	12	12	27	8	12	0	215	95	\$24	0	107	48	\$12	\$36	92
0	0		0	0	0	0	0	0	0	<u> </u>	0	\$0	0	0	0	\$0	\$0	93
1,492 806	3	1,119 604	4	1,492	4	2,238 806	10	2,238 1,343	56 34	6,714 4,028	11,936 7,520	\$1,748 \$1,074	56	8,952	8.952	\$1,725	\$3,472	94
1.552	4	1,164	<u>8</u>	1.552	4	1,164	8	1,552	58	9,310	12,413	\$1,963	20 29	3,22 3 4,65 5	5.371 6.207	\$777 \$1,009	\$1 ,851 \$ 2,972	95 96
2,257	2	1,693	4	2,257	4	3.386	6	3,386	85	10,157	18,057	\$2,644	85	13,543	13 543	\$2 609	\$5,253	97
1,253	12	2.820	8	1,253	12	2.820	8	1,253	47	22,559	10,026	\$2,524	23	11,280	5 013	\$1,286	\$3,810	98
5,340	3	4.005	8	7,120	4	5,340	10	8,900	223	26,701	49,842	\$7,122	134	21,361	35 601	\$5,147	\$12,269	99
2.380 155	12	1.785 349	<u>4</u> 8	2 380 155	- 12	3,569 349	<u>6</u>	3,569 155	- 89 6	10,708 2,793	19,036	\$2,787 \$313	8 9	14,277 1,397	14 277 .	\$2,750	\$5,538	100
	0	0	0	0	- 6	0.		0		0	0	\$0		.,,397	621	_ \$1 59 \$ 0	\$472 \$0	101
1,643	2	1,232	4	1,643	4	2,464	6	2,464	62	7,3 93	13 ,143	\$1,924	62	9,857	9.857	\$1.899	\$3,823	103
2,387	12	5,371	8	2,387	12	5,371	8	2,387	90	42,970	19,098	\$4,808	45	21,485	9,549	\$2 449	\$7,257	104
70 4,645	<u>12</u>	157 3.483	8	6,193	12	157 4,645	10	7,741	194	1,253 23,223	557 43,349	\$140 \$6,194	116	18,578	279	\$71	\$212	105
2,693	3	2,020	8	3,591		2,693	10	4,489	112	13,466	25,137	\$3,592	67	10,773	30,963 17,955	\$4,476 \$2,596	\$10,670 \$6,188	106
781	2	58 6	4	781	4	1,171;	6	1,171	29	3,514	6.247	\$915	29	4,685	4.685	\$903	\$1,817	108
1,998	2	1,499	4	1,998	4	2,997	6	2,997	75.	8,9 92	15,986	\$2,341	75_	11,990	11,990	\$2,310	\$4,650	109
208	3	604 156	<u>8</u>	1,074 208	4	806 313	10 6	1,343 313	34 8	4,028 938	7,520 1,668	\$1,074	20	3,223	5.371	\$777	\$1,851	110
1,253	4	940	8	1,253		940		1,253	47	7,520	10,026	\$244 \$1,585	23	1,251 3,760	1,251 5,013	\$241 \$815	\$485 \$2,401	111
165	12	372	8	165	12	372	8	165	6	2,972	1,321	\$333	3	1,486	6 60	\$169	\$502	113
776	4	582	8	776	4	582	8	776	29	4,655	6,207	\$981	15	2,328	3,103	\$505	\$1,486	114
761 761	3	571 571	- 8	1,015	4,	761	10	1,268	32	3,805 3,805	7,102 7,102	\$1,015 \$1,015	19	3,044	5,073	\$733	\$1,748	115
82	12	184	8	82	12.	184	8	82	3	1,468	653	\$164	2	3,044 734	5.073 326	\$733 \$84	\$1,748 \$248	116
776	12	1,746	8	776	12	1,746	8	776	29	13,96 5	6,207	\$1,563	15	6,983	3.103	\$795	\$2,359	118
418	12	940	8	418	12	940	8	418	16	7,520	3,342	\$841	В.	3,760	1,671	\$429	\$1,270	119
38	12	8 5	0	38	12	<u>85</u> 0	- 8	38		680 C	302 0	\$76 \$0		34 0	<u>151</u>	\$39	\$1,15	120
1,134	12	2,551	8	1,134	12	2,551	8	1.134	43	20,411	9,071	\$2,284	21	10,205	4 536	\$1,163	\$0 \$3 447	121
776	12	1,746	8	776	12	1,746	8	776	29	13,965	6,207	\$ 1, 5 63	15	6,983	3 103	\$ 796	\$2,359	123
1.190	2	892	4	1,190	4	1,785	6	1,785	45.	5.354	9,518	\$1,394	45	7.139	7 139	\$1,375	\$2,769	124
1,194	12	2,686 2,417	8	1,194	12	2,686 2,417	- 8	1,194	45	21,485 19,336	9,549 8,594	\$2,404 \$2,164	22	10,742	4 774	\$1,224	\$3,629	125
745	2	560	4	746	4	1,119	6	1,119	28	3,357	5 ,968	\$874	28	9,6 68 4,4 76	4.297 4.476	\$1.102 \$862	\$3,266 \$1,736	126
1,029	3	772	8	1,373	4	1,029	10	1,716	43	5,147	9,608	\$1,373	26	4,118	6,863	\$992	\$2,365	128
189	12	425		189	12	425	8	189	7.	3,402	1,512	\$381	4	1,701	756	\$194	\$575	129
4,513	2	3,385	-0-4	4,513	0	6,769	- 6	6,769	169	20,307	36,102	\$0 \$5,286	169	27.076	0	\$0	\$0	130
1,281		961	4	1,281	4	1,922	- 6	1,922	48	5.765	10,249	\$1,501	48	27,076 7,687	27.076 7.687	\$5,216 \$1,481	\$10,502 \$2,981	131
2,387	4	1,790	8	2,387	4	1,790	8	2,387	90	14,323	19,098	\$3,020	45	7,162	9,549	\$1,553	\$4,572	133
70	12	157	8	70	12	157	В	70	3	1,253	5 57	\$140	1	627	279	\$71	\$212	134
8,835 1,194	3	6,626 895	8	1,780	4:	8,835 895	10 8	1,194	368 45	44,175 7,162	9,549	\$11,783	221	35,340	58.900	\$8,515	\$20,298	135
165	12	372	 8	165	12	372	6	165	6	2,972	1,321	\$1,510 \$333	3	3,581 1,486	4,774 660	\$776 \$169	\$2,286 \$502	136
1,298	3	974	8	1,731	4	1,298	10	2,163	54	6,490	12,115	\$1,731	32	5,192	8 654	\$1,251	\$2,982	137
865	2	649	4	8 65	4.	1,298	6	1,298	32	3,894	6,923	\$1,014	32	5,192	5,192	\$1,000	\$2,014	139
1.992	3	1,494	<u>8</u>	2.656	4_	1.992	10	3,320	83	9,959	18,590	\$2,656	50	7,967	13,279	\$1,920	\$4,576	140
1.298 865	2	974 649	8.	1,731 865	4	1,298	10 6	2,163 1,298	54 32	6,490 3,894	12,115 6,923	\$1,731 \$1,014	32 32	5,192	8,654	\$1,251	\$2,982	141
1.790	3	1,343	8	2,387	4	1,790	10	2,984	75	8,952	16,710	\$2,388	45	5,192 7,162	5,192 11,936	\$1,000 \$1,726	\$2,014 \$4,113	142
1.992	3	1.494	8	2.656	4	1,992	10	3,320	8 3	9.959	18,590	\$2,656	50	7,967	13.279	\$1,920	\$4,576	144
2.775	3	2.081	8	3,700	4	2,775	10	4,625	116	13,876	25,901	\$3,701	69	11,100	18 501	\$2,675	\$6,376	145
1,850 B0	- 2-	1,388	8	1,850	4	2,775	6_	2,775	69	B,325	14,801	\$2,167	69	11,100	11 100	\$2 138	\$4,305	146
1,253	12	179 940	8	1,253	12	179 : 940	B 	1,253	47	1,432 7,520	10,026	\$160 \$1,585	23	716 3,760	318 5 013	\$87	\$242	148
328	4.	246	8	328	4	246	8	328	12	1,969	2,626	\$415		985	1.313	\$815 \$213	\$2,401 \$629	149
38	12	8 5	8	38	12	85	8	38	1	680	3 02	\$76	1	340	151	\$39	\$115	150
0	0_	0.	Q	0	0	0 :	0	0	0	0	0	\$0	0	0	0	\$0	\$0	161

FT. MONMO BUILDING 2700 ELECTRIC MODI

			HVAC Airside Equipment - General Inform	nation	Cooling Equipment	Total	Winter	intermed	ı. Su
	Design/Site		Field	Area	Field	Connected	Demand	Demand	_
	Designatio	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month		
152	AC-7 AC-1(New)	AHU	unknown(MR - 41 South 4C/D100 Area) Governair RSA06(located on roof)	4D110 lab/offices	Compressor in MR-41 & tower on roof Common Bohn Chiller on roof	40 2	10 1	20	
154		AHU	Governair RSA03(located on roof)		Common Bohn Chiller on roo!	97 9 62 4	49 0 31 2	· 73 4	
155	AC-2(New)	AHU	Governair RSA02(located on roof)		Common Bohn Chiller on roof	37 4	187	28	
156	AC-SIVEW/	AHU	Carner ?(in/above 4D140 Cleanroom)	4D140 Cleanroom	Camer Chiller on roof	26 7	13 4	20 (
157	AHU-R-1		Trane C C.(On roof above 4C/D100 Area)	4C/D100 offices/comdors	Plant Chilled Water @ 55 degrees F	7.8	5 9	5 9	
158			Trane C.C.(On roof above 4C/D100 Area)	4C/D100 offices/comdors	Plant Chilled Water @ 55 degrees F	7 1	53	5 3	
159	FC-1(83)		:unknown(83 in 4C/D100 area)	4C/D100 penmeter areas	Plant Chilled Water @ 55 degrees F	10	0.8	0.8	
160	C-5	Convector	unknown(Near Elevator #1 - Fourth floor)	Hallway - Elev. #1	N/A	0 00	00	0 (D
161			Data Air(4C205/Computer room)	4C205 Area	(2) Common Bohn units(located on roof)	23 9	119	17 9	9
162	:		Data Air(4C209/Computer room)	4C209 Area	(2) Common Bohn units(located on roof)	12 7	6.3	9.5	
163			Data Air(4C211/Computer room)	4C211 Area	(2) Common Bohn units(located on roof)	12 7	6.3	9 5	
164	L		Data Air(4C213/Computer room)	4C213 Area	(2) Common Bohn units(located on roof)	12 7	63	9.5	
165 166			Edpac(4D204/Computer room)	4D204 Area 4D204 Area	(2) Common Bohn units(located on roof)	12 7	6.3	9.5	
167			Data Air(4D208/Computer room)	4D208 Area	(2) Common Bohn units(located on roof)(2) Common Bohn units(located on roof)	12.7 18.7	9.3	14 (
168			Data Air(4D210/Computer room)	4D210 Area	(2) Common Bohn units(located on roof)	6.3	3.2	4 8	
169			Data Air(4D214/Computer room)	i4D214 Area	(2) Common Bohn units(located on roof)	63	3.2	4.8	
170	AHU-R-3		Trane C.C.(On roof above 4C/D300 Area)		Plant Chilled Water @ 55 degrees F	9.7	7.3	7.3	
171	FC-1(40)	FC	unknown(40 in 4C/D200 area)	4C/D200 permeter areas	Plant Chilled Water @ 55 degrees F	0.5	0.4	0.4	
172			Liebert(4D308/Computer room)	4D308	Liebert Unit in 4D308 & tower on roof	12 7	6.3	9.5	
173			Edpac(4D317/Computer room)	4C317	Edpac Unit in 4C317 & tower on roof	13.4	6.7	10 1	
174	<u>-</u>		Liebert(4D324/Computer room)	I4D324	Liebert(located on roof)	16.6	83	12 4	
175 176			:Liebert(4D326/Computer room) :Liebert(4D328/Computer room)	14D326 4D328	Liebert(located on roof)	10.8	54	8 1	
177			Liebert(4D328/Computer room)	4D328	Liebert(located on roof)	10 8	<u>54</u> 27	8 1 5.4	
178			Trane C.C. (On roof above 4C/D300 Area)	:4C/D300 offices/comdors	Plant Chilled Water @ 55 degrees F	10.8 4.8	36	3.6	
179	FC-1(88)		iunknown(88 in 4C/D300 area)	4C/D300 penmeter areas	Plant Chilled Water @ 55 degrees F	1.1	0.8	0.8	
180			Datac(4C405/Computer room)	I4C405	Liebert(located on roof)	16.6	83	12 4	
181		Recirc AC	Liebert(4C405/Computer room)	4C405	Liebert(located on roof)	16.6	8.3	12 4	
182			Liebert(4C405/Computer room)	4C405	Liebert(located on roof)	16.6	4 1	8.3	3
183			Liebert(4C405/Computer room)	14C405	Liebert(located on roof)	10.8	2.7	5.4	
184			Liebert(4C417/Computer room)	I4C417	Liebert(located on roof)	16.6	<u>83</u>	12.4	
185			Liebert(4C417/Computer room)	I4C417	Liebert(located on roof) Liebert(located on roof)	16.6	83	12 4	
186					Plant Chilled Water @ 55 degrees F	8.6 5.2	3.9	4.3 3.9	
188	FC-1(44)		iunknown(44 in 4C/D400 area)	4C/D400 penmeter areas	Plant Chilled Water @ 55 degrees F	0.5	0.4	0 4	
189					Plant Chilled Water @ 55 degrees F_	9.7	7.3	7.3	
190	FC-1(20)				Plant Chilled Water @ 55 degrees F	0.2	0.2	0.2	***
191					N/A	0.0	0.0	0.0)
192			AAF Colag	Room 4D110	N/A	3 02	23	2 3	
193			Trane CF13A	Room 4D110	N/A	0 37	03	0.3	
194			Dayton AAF	MR 21, 31, & 41 Room 4D120	N/A	1.49	11	1 1	
195 196		Scrubber Scrubber	Duall (Met-Pro) Model NH40	Room 4D120	N/A N/A	14.92 5.59	11.2 4.2	11.2 4.2	
197			EV-1	East End Toilets	N/A	1.49	11	11	
198			Car-Mon Model CMB-35	4D130 - Toxic Gas	N/A	3 73	2.8	2.8	
199			IEV-2		N/A	0.75	0.6	0.6	
200	A13 [Exhaust	EV-7 (2-speed at 18,000 & 9,000 CFM)	1st Floor Audio/Visual	N/A	2.24	17	17	
201			Duall (Met-Pro) Model NH36 5	Room 4D130	N/A	7 46	5.6	5.6	
202			American Standard Type S	Room 4D108	N/A	3.73	2.8	2.8	***
203				Room 2D134	N/A	0.37	0.3	0.3	
204					N/A	7.46	5.6	5.6	
205				Room 2D129 Room 4D130	N/A N/A	0.37	0.3	0.04	
207					N/A	0.06	0 04	0.04	
208					N/A	1 47	11	1.1	
209					N/A	7 46	5.6	5.6	
210	4.00	C le		Room 20202	N/A	0,15	0.1	0 1	
211					N/A	1 49	1.1	1.1	
212	A34 E				N/A	0 04	0.03	0.03	
213					N/A	0.37	0.28	0.28	
214					N/A	0.04	0.03	0.03	
215					N/A	0.37	0.3	0.3	
216					N/A	0.37	03	0.3	
217 218					N/A N/A	2.24	17	1.7	
218					N/A	0.25	0.2	0.2	
220					N/A	0.25	06	0.6	
221					N/A	2 24	17	17	
222					N/A	0.37	03	03	
223					N/A	1 49	11	1 1	
224					N/A	0 37	03	03	
					N/A	0 00)

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - ALL FLOORS & BUILDING 2706 HVAC EQUIPMENT

TABLE 5.6.2.2

								ng Months		rmediate E				ummer Bil			<u> </u>	
	Cooling Equipment	Total	Winter Demand	. intermed. Demand	Summer Demand		f-Peak	On-Peak hrs/	hrs/	1-Peak		-Peak		-Peak		-Peak	D	Non-Sum Off-Peak C
	Field Data/Reference/(Location)	Connected Load (kW)		kW/month		hrs/	·kWh/Mo			kWh/Mo	hrs/ day	kWh/Mo	hrs/ day	kWh/Mo	hrs/ dav	kWh/Mo	bemand kW/Yr.	Off-Peak C KWH/Yr. K
	Compressor in MR-41 & tower on roof	40.2	10 1	20 1	30.2	Uay	1 1,207	4 3,219	uay	2 2,414	4		uay 4		<u>uay</u> 6	4,828	121	14.484
ss 10		97 9	490	73 4	73 4		2 5.874	4 7,832		11,748	6		8		10	19,580	490	70,488
	Common Bohn Chiller on roof	62 4	31.2	46 8	46.8		2 3.744	4 4,992		7.488	6	7.488	8		10	12,480	312	44,928
ss 10	Common Bohn Chiller on roof	37 4	18 7	28 1	28.1		2 2,244	4 2,992			6	4,488	8	8,976	10	7,480	187	26,928
	Camer Chiller on roof	26 7	13 4	20 .0	20.0		2 1.604	4 2,138	1 4		6		8		10	5,34 6	134	19,246
	Plant Chilled Water @ 55 degrees F	7.8	59	59	59	12		8 1,253	1 _ 1		8	1,253	12		<u>B</u> _	1,253	47	22,559
ors	Plant Chilled Water @ 55 degrees F	7 1	53	53	5.3			8 1,134	1:		8		12			1,134	43	20,411
as	Plant Chilled Water @ 55 degrees F	0.00	0.8	08	0.0	1;	372	8 165 0 0	1		8		12		<u>8</u>	165	6	2,972
	(2) Common Bohn units(located on roof)	23 9	11.9	17.9	17.9			6 2.865	1-5		0 8		0	2 865	10	4,774	119	14.323
	(2) Common Bohn units(located on roof)	127	63	9.5	9.5	-	761	6 1,522			8		4	1,522	10	2,536	63	7,609
	(2) Common Bohn units(located on roof)	12 7	63	9.5	9.5			6 1,522	 		8		4		10	2,536	63	7,609
	(2) Common Bohn units(located on roof)	12 7	63	9.5	9.5	- 2	761	6 1,522			8	2,029	4		10	2,536	63	7,609
	(2) Common Bohn units(located on roof)	12 7	6.3	9.5	9.5			6 1,522	3	1,141	8	2,029	4	1,522	10	2,536	6 3	7,609
	(2) Common Bohn units (located on roof)	12 7	6.3	9.5	9.5			6 1,522			8		4	1,522	10	2,536	63	7,609
	(2) Common Bohn units(located on roof)	18 7	9.3	14 0	14.0	_	1,119	6 2.238	13		8		4		. 10	3,730	93	11,190
!	(2) Common Bohn units(located on roof)	6.3	3.2	48	4.8		-	6 761	1_3		8		4		10	1,268	32	3,805
	(2) Common Bohn units(located on roof)	63	3.2	4.8	4.8			6 761	-3		8		4		10	1,268	32	3,805
	Plant Chilled Water @ 55 degrees F	97	7.3	7.3	7.3	12		8 1,552 8 80	12		<u>8</u>		12		8	1,552	58	27,930 1,432
as	Plant Chilled Water @ 55 degrees F Liebert Unit in 4D308 & tower on roof	12 7	63	95	9.5			6 1,522	12		8	2,029	12	179 1,522	10	2,536	63	7,609
{	Edpac Unit in 4C317 & tower on roof	13 4	67	10 1	10 1		806	6 1,611			<u>8</u>	2,148	4	1,611	10	2,686	67	8.057
[Liebert(located on roof)	16 6	83	12 4	12 4		996	6 1,992	13		8	2,656	4	1,992	10	3,320	83	9,959
	Liebert(located on roof)	108	5.4	8 1	8.1	2	649	6 1,298	3		8	1,731	4	1,298	10	2,163	54	6,490
	Liebert(located on roof)	10 8	5 4	8.1	8 1	2	649	6 1,298	3		8	1,731	4	1,298	10	2,163	54	6,490
	Liebert(located on roof)	10 8	27	5 4	8.1		325	4 8 65	2		4	865	4	1,298	6	1,298	32	3,894
∍rs	Plant Chilled Water @ 55 degrees F	48	3.6	3.6	3.6	12		8 776	12		8	776	12		8	776	29	13,965
	Plant Chilled Water @ 55 degrees F	11	0.8	0.8	0.8	12		8 175	12		8	175	12		. 8	175	7	3,151
	Liebert(located on roof)	16.6	8.3	12 4	12.4 12.4			6 1.992 6 1.992	3		8	2,656	4		10	3,320	83	9,959
	Liebert(located on roof)	16.6 16.6	8.3 4.1	12 4 8.3	12.4	1		6 1,992 4 1,328	3		8		4		<u>10</u> .	3,320 1,992	83 50	9,959 5,975
	Liebert(located on roof)	10.8	2.7	5.4	8.1			4 865	2			865	4		6	1,298	32	3,894
	Liebert(located on roof)	16.6	8.3	12.4	12.4		996	6 1,992	3		8	2,656	4		10	3,320	83	9,959
	Liebert(located on roof)	166	8.3	12 4	12.4	2		6 1,992	3		8		4		10	3,320	83	9,959
i	Liebert(located on roof)	86	2 1	43	6.4	1	257	4 686	2		4		4	1,029	6	1,029	26	3,088
mdorf	Plant Chilled Water @ 55 degrees F	5.2	3.9	39	39	12		8 83 6	12		- 8	836	12	1,880	8	836	31	15,039
	Plant Chilled Water @ 55 degrees F	0.5	04	0 4	0.4	12		8 88	12		. 8	88	12	197	8	88	3	1,576
	Plant Chilled Water @ 55 degrees F	9.7	7.3	7.3	7.3	12		8 1,552	12		. 8		12		<u>8</u>	1,552	58	27,930
	Plant Chilled Water @ 55 degrees F	02	0.2	0.2	0.2	12		8 40 0 0	12		<u>8</u>	40	12	90	- <u>8</u> -	40	0	716 0
	WA .	3.02	2.3	2.3	2.3	12		8 483	12		0 	483	12	1,086	8	483	18	8,689
	WA	0.37	0.3	0.3	0.3	12		8 60	12		8	60	12	134	8	60		1,074
-	WA .	1.49	1.1	11	1.1	12		8 239	12		8	239	12	537	8	239	9	4,297
	WA	14.92	11.2	11.2	11.2	12		8 2,387	12	5,371	8	2,387	12	5,371	8	2,387	90	42,970
	₩A	5.59	4.2	4.2	4.2	12		8 894	12		8	894	12		- 8	894	34	16,090
	N/A	1.49	1.1	1.1	11	12		8 239	12		8	239	12	537	8	239	9	4,297
	₩A	3 73	2.8	28	2.8	12		8 597	12		8	597	12	1,343	8	597	22	10,742
	VA VA	0 75	<u>0.6</u>	1.7	0.6 1.7	12 12		8 119 8 358	12		8 8	119	12	269 806	<u>8</u>	119 358	13	2,148 6,445
	VA	7 46	5.6	56	5.6	12		8 1,194	12		<u>-</u> 8	358 1,194	12	2,686	- 8	1.194	45	21.485
	VA .	3 73	2.8	2.8	2.8	12		8 597	12		8	597	12	1,343	8	597	22	10,742
	VA	0.37	0.3	0.3	0.3	12		8 60	12		8	60	12	134	8	60	2	1,074
	VA.	7.46	5.6	5.6	5.6	12		8 1,194	12		8	1,194	12	2,686	8	1,194	45	21,485
	UA .	0.37	0.3	0.3	0.3	12	134	8 60	12	134	8	60	12	134	8	60	2	1,074
	VA	0.06	0.04	0.04	0.04	12		8 9	12		8	9	12	21	8	9	0	169
	VA.	0.06	0.04	0.04	0.04	12		8 9	12		8	9	12	21	8	9	0	169
	I/A	1.47	1.1	1.1	1.1	12		8 235	12		. 8	235	12	528	8	235	9	4,225
	I/A	7 46	5.6	5.6	5.6	12		B 1,194	12		8	1,194	12	2,686	8	1,194	45	21,485
	VA VA	0.15	0.1	0.1	0.1	12		8 23	12		<u>B</u> _	23	12	53		23	<u></u>	423
	VA	0.04	0.03	1.1 0.03	0.03	3		8 239	12 3		- 8 2	239	12	537	<u>8</u>	239	9	4,2 97
	VA	0.37	0.28	0.28	0.28	3		2 15	3		2	15	3	34	2	15		269
	VA .	0.04	0.03	0.03	0.03	3		2 2	3		2	2	3	4	2.	2	0	32
	VA	0.37	0.3	0.3	0.3	12		B 60	12		В	60	12	134	8	60	2	1,074
	VA	0.37	0.3	0.3	0.3	12		B 60	12		8	60	12	134	8	60	2	1,074
	VA	2.24	1.7	17	1.7	12		8 358	12	806	8	358	12 :	806	8	358	13	6,445
	VA	0.25	0.2	0.2	0.2	12		8 39	12	89	8	39	12	89	8	39	1	709
	VA	0.75	0.6	0.6	0.6	12		8 119	12		8	119	12	26 9	8	119	4 :	2,148
	VA	0.25	0.2	0.2	0.2	12		8 39	12		<u>8</u> .	39	12	89	B	39	1	709
	VA	2.24	1.7	1.7	- 1.7	12		8 <u>358</u>	12		<u>8</u>	358	12	806	8	358	13	6,445
	VA	1.49	0.3	03	0.3	12		8 <u>60</u> 8 23 9	12		8_	60	12	134	8_	60	2	1,074
	VA VA	0.37	0.3	0.3	0.3	- 12 3			12		- <u>8</u> -	239 15	12	537	8.	239 15	<u>9</u> .	4,297 26 9
	VA	0.00	0.0	0.3	0.0	<u>3</u>		2 15	3 3		2.	0	3	34	2:	0	- 2	0
		0.001	0.0		0.01			^ <u></u>		·		<u>vI</u>						



1ENT OF THE ARMY RS & BUILDING 2706 HVAC EQUIPMENT

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donths			lilling Mont	_		ımmer Bil			} _	No - C							· · · · · · · · · · · · · · · · · · ·	 -
On-Peak	hrs	ff-Peak	On-Peal	-	hrs/	Peak	hrs/	-Peak	Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	on-Peak	Cost	Annual Cost	
y kWh/			day kWi			kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.		5	No.
4 7.8		2 2,414 4 11,748		748	8	4.828 23.496	10	4.828 19,580	121 490	14.484 70.488	25,749 78,320	\$3,770 \$14,135	121 294	19.312 93.984	19,312	\$3,720	\$7 490	152
4 4.9		4 7,488		488	8	14.976	10	12,480	312	44,928	49,920	\$9,009	187	59,904		\$14,263 \$9,091	\$28,397 \$18,100	153
4 2,9		4 4,488		488	8	8,976	10	7,480	187	26,9 28	29,920	\$5,400	112	35,904	29.920	\$5,449	\$10.848	
4 2.1		4 3,208		208	8	6,415	10	5,346	134	19,246	21,384	\$3,859	80	25,661	21.384	\$3,894	\$7,754	156
8 1,2 8 1,1				253	12	2,820 2,551	<u>8</u> 8	1,253 1,134	47	22,559 20,411	10,02 6 9 ,071	\$2,524	23	11,280	5,013	\$1,286	\$3,810	157
	35 1			134	12	372	8	165	6	2,972	1,321	\$2.284 \$333	21	10,205 1,486	4,53 6 6 60	\$1,163 \$169	\$3 447 \$502	158
0	_	0 0	0	Ö	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	160
6 2,8				820	4	2,865	10	4,774	119	14,323	26,7 37	\$3,820	72	11,459	19,098	\$2,761	\$6,581	161
6 1.5 6 1.5		3 1,141		029	-4	1,522	10	2,536 2,536	63 63	7,609 7.609	14,204	\$2.030	38.	6.087	10.146	\$1,467	\$3,496	162
6 1,5		3 1,141 3 1,141		029 029	4	1,522 1,522	10	2,536	63	7,609	14,204 14,204	\$2,030 \$2,030	38	6,087 6,087	10,146 10,146	\$1,467 \$1,467	\$3,496 \$3,496	163
6 1,5				029	4	1,522	10	2,536	63	7,609	14,204	\$2,030	38	6,087	10.146	\$1,467	\$3,496	165
6 1.5				029	4	1,522	10	2,536	63	7,609	14,204	\$2,030	38	6.087	10.146	\$1,467	\$3,496	166
6 2,2				984	4.	2,238 761	<u>. 10</u>	3,730 1,268	93 32	11,190 3,805	20,888 7,102	\$2,985	56	8,952	14,920	\$2,157	\$5,142	167
6 70				015 015	4	761	10	1,268	32	3,805	7,102	\$1,015 \$1,015	19 19	3.044 3.044	5,073 5,073	\$733 \$733	\$1,748 \$1,748	168
8 1.55				552	12	3,491	8	1,552	58	27,930	12,413	\$3,125	29	13.965	6,207	\$1,592	\$4,717	169 170
	12		В	80	12	179	8	80	3	1,432	637	\$160	1.	716	318	\$82	\$242	171
6 1.53 6 1.63				029	4	1,522	10	2.536 2.686	63 67	7,609 8,057	14.204 15.039	\$2,030	38	6,087	10.146	\$1,467	\$3,496	172
6 1.99				148 556	4	1,611	10	3,320	B3	9,959	18,590	\$2,149 \$2,656	40	7,967	10,742	\$1,553 \$1,920	\$3,702	173
6 1,29	8 3			731	4	1,298	10	2,163	54	6,490	12,115	\$1,731	32	5,192	8,654	\$1,251	\$4,576 \$2,982	175
6 1,29				731	4	1.298	10	2,163	54	6.490	12,115	\$1,731	32	5,192	8 654	\$1,251	\$2,982	176
<u>4</u> <u>86</u>				365	4	1,298	6	1,298 776	32 29	3,894 13.965	6,923	\$1,014	32	5,192	5,192	\$1,000	\$2,014	177
8 17				776 175	12	394	<u>8</u>	175	7	3,151	6,207 1,400	\$1,563 \$353	15 -	6,983 1,576	3,103 700	\$796 \$180	\$2,359	178
6 1,99			8 2,€		4	1,992	10	3,320	83	9,959	18,590	\$2,656	50	7,967	13,279	\$1,920	\$532 \$4,576	179 180
6 1,99			8 2,6		4 :	1,992	10	3,320	83	9,959	18,590	\$2,656	50	7.9 67	13,279	\$1,920	\$4,576	181
4 132			4: 1.3		4	1,992 1,298	6	1,992	50 32	5,975 3,894	10,623 6,923	\$1,555	50	7,967	7,967	\$1,535	\$3,090	182
6 1,99			- 4 E	365 356	4:	1,992	10	3,320	83	9,959	18,590	\$1,014 \$2,656	32 50	5,192 7,967	5,192 1 13,279	\$1,000 \$1,920	\$2,014	183
6 1,99			8 2,6		4	1,992	10	3,320	83	9,959	18,590	\$2,656	50	7,967	13,279	\$1,920	\$4,576 \$4,576	185
4 68				86	4 :	1,029	6	1,029	26	3,088	5,491	\$804	26	4,118	4,118	\$793	\$1,597	186
8 83				88 88	12	1,880 197	<u>8</u>	836 88	31	<u>15,039</u> . 1,576	6,684 700	\$1,683 \$176		7,520	3,342	\$857	\$2,540	187
8 1,55				52	12	3,491	8	1,552	58	27,930	12,413	\$3,125	29	788 13,965	3 50 6 ,207	\$90 \$1,592	\$266 \$4,717	188
8 4	12		8	40	12	90	8	40	1	716	318	\$80	1	358	159	\$41	\$121	190
	0		0	0	0	0	0	0	0	0 0	0	\$0	0	0	0	\$0	\$0	191
8 48 8 6				83 60	12	1,086	- <u>8</u> -	483	18	8,689 1,074	3.862 477	\$972 \$120	4-	4,344	1,931	\$495	\$1,467	192
8 23				39	12	537	8	239	9	4,297	1,910	\$481	4	537 2,148	239 955	\$61 \$245	\$181 \$726	193
8 2,38		5,371	8, 2,3	87	12	5,371	8	2,387	90	42,970	19,098	\$4,808	45	21,485	9,549	\$2,449	\$7,257	195
8 23				94	12 :	2.011	<u>B</u>	894	34 9	16,090	7,151	\$1,801	17	8,045	3,576	\$917	\$2,717	196
-8 - 23 8 - 59		537 1,343		39 97	12	1,343	<u>8</u>	239 597	22	4,2 97 10,742	1,910 4,774	\$481 \$1,202	<u>4</u>	2,148 5,371	955	\$245	\$726	197
8 119		269		19	12	269	8	119	4	2,148	955	\$240	2	1,074	2,387 : 477	\$612 \$122	\$1,814 \$363	198
8 35		806		58	12	806	8	358	13	6,445	2,865	\$721	7.	3,223	1,432	\$367	\$1,089	200
8 1,19 8 59			8 1,1		12	2,686	8	1,194	45	21,485	9,549	\$2,404		10,742	4.774	\$1,224	\$3,629	201
8 59		1,343 134		97 60	12:	1,343	8	597 60	22	10,742	4,774 477	\$1,202 \$120		5,371 537	2,387	\$612	\$1,814	202
8 1,194			8 1,1		12	2,686	8	1,194	45	21,485	9,549	\$2,404	22	10,742	239 4,774	\$61 \$1,224	\$181 \$3,629	203
8 60		134	8	50	12	134	8	60	2	1,074	477	\$120	1	537	23 9	\$61	\$181	205
8 9		21	8	9	12	21	8	9	0:	169	<u>75</u>	\$19	0	85	38	\$10	\$29	206
8 235		528	8 2:	9 35	12	528	8	235	9.	4,225	75 1,878	\$19 \$473	0	<u>85</u> 2,113	939	\$10	\$29	207
8 1,194	12	2,686	8 1,19			2,686	- 8	1,194	45	21,485	9,549	\$2,404		10,742	4,774	\$241 \$1,224	\$714 \$3,629	208
8 23	12	53	8 2	23	12	53	В	23	1	423	188	\$47	Ċ	211	94	\$24	\$71	210
8 239				39	12	537	8	239	9	4,297	1,910	\$481	4	2,148	955	\$245	\$726	211
2 2 2 15		34	2	2 15	3	34	2 .	15	2 :	269	119	\$5 \$44	01	16		\$3	\$8	212
2 2		4	2	2	3;	4	2	2	0	32	119	\$5	0	134	<u>60</u>	\$23 \$3	\$67 \$8	213
8 60	12	134	8 (50	12	134	8	60	2	1,074	477	\$120	1	537	239	_ \$ 61	\$181	215
_8 _60		134		30	12	134	8	60	2	1,074	477	\$120	1	537	239	\$61	\$181	216
8 358 8 39		80 6 :	8 3		12	806:	8	358	13	6, 44 5 709	2,865	\$721	7	3,223	1,432	\$367	\$1,089	217
8 119		26 9	8 3	19	12	26 9	- <u>8</u>	119	4 1	2,148	315 955	\$79 \$240	$-\frac{1}{2}$	354 1,074	158 477	\$40	\$120	218
B 3 9		89		9	12	89	8	39	1	709	315	\$79		354	158	\$122 \$40	\$363 \$120	219
8 358		806	8 35	8	12	806	8	358	13	6,445	2,865	\$721	7	3,223	1,432	\$367	\$1,089	221
8 <u>60</u> 8 23 9		134		<u>-</u>	12:	134	8	60	9	1,074	477	\$120		537	239	\$61	\$181	222
8 239 2 15	12	537 34	8 23 2 1	5	12 3	537 34	2	239	2	4,297 ?69	1,910 119	\$481 \$44	1	2,148 134	955	\$245	\$726	223
2 0		0		ö -	3	0	2	0	0	0	0	\$0	0	0	60	\$23 \$0	\$67 \$0	224

FT. MON! BUILDING 2700 ELECTRIC M(

			HVAC Airside Equipment - General Inform	nation	Cooling Equipment	Total	Winter	Intermed.
	Design/Site Designatio	Equip. Type	Field Data/Reference/(Location)	Area Served	Field Data/Reference/(Location)	Connected Load (kW)	Demand kW/month	Demand kW/month
226	B15	Exhaust	EV-20	.3rd Floor	N/A	0.25	0.2	0:
227	B17	Exhaust	Trane CUBA-163 (NIS)	Unknown	N/A	1 49	11	
228	B18 B19	Exhaust Exhaust	Trane CUBA-163 (NIS)	Unknown	N/A N/A	1 49	11	! !
229 230	B20	Exhaust	EV-23 (NIS)	2nd Floor	N/A	0 25	0.2	<u>1</u> 1
231	B21	Exhaust	IEV-25	2nd Floor	N/A	2.24	17	1 7
232	B22	Exhaust	EV-22 (NIS)	2nd Floor	N/A	1 49	11	1 1
233	B23	Exhaust	EV-103	2nd Floor	N/A	0 37	0.3	0.3
234	B24	Exhaust	EV-102	2nd Floor	N/A	0 19	01	0.1
235	B25	Exhaust	EV-84 (NIS)	14th Floor	N/A	0 37	03	0.3
236 237		Exhaust Exhaust	EV-100 (NIS) Dead Unit	Unknown	N/A N/A	0.00	00	0.0 0.0
238		Exhaust	EV-25A	2nd Floor	N/A	0.37	0.3	0 3
239		Exhaust	IEV-127	MR 23, 33, & 43	N/A	0.37	0.3	03
240	C4	Exhaust	EV-86 (NIS)	1st Floor	N/A	0.37	0.3	0.3
241		Exhaust	EV-110	2nd Floor	N/A	0.07	0 1	0 1
242	C12	Exhaust	EV-108	i2nd Floor	N/A	0.56	04	04
243 244	C13 C15	Scrubber Exhaust	Duall (Met-Pro) EV-89 (NIS)	Room 2D202	N/A N/A	3 52	26	2.6
244		Exhaust	EA-09 (1412)	:1st Floor :1st Floor	N/A	0 37	03	11
245		Exhaust	EV-88	1st Floor	N/A	075	06	06
247		Exhaust	EV-108A (NIS)	2nd Floor	N/A	0.56	0 4	0.4
248	D11	Exhaust	None (NIS)	Unknown	N/A	0 19	0.1	0 1
249		Exhaust	None (NIS)	3rd Floor	N/A	0 15	01	01
250		Exhaust	EV-125	4D336	N/A	0 56	0.4	04
251		Exhaust Exhaust	IRF-1 (Amencan) (None (NIS or Dead Unit ?)	3rd Floor (Guess)	N/A	0 37	0.3	03
252 253		Exhaust	New York Blower (NIS or Dead ?)	Unknown	N/A N/A	0.00	0.0	00
254		Exhaust	Dead Unit	Unknown	N/A	0.00	0.0	00
255		Exhaust	EV-73	Basement	N/A	0.56	0.4	0 4
256		Exhaust	EV-73 (NIS)	1st Floor	N/A	0.25	0.2	0.2
257		Exhaust	RF-2	3rd Floor (Guess)	N/A	0.19	0.1	0 1
258		Exhaust	RF-3	4th Floor (Guess)	N/A	0.56	04	0.4
259		Exhaust	None (NIS)	3rd Floor (Guess)	N/A	0.75	0.6	0.6
260 261		Exhaust Exhaust	RF-4 (NIS) Dead Unit	4D336 Unknown	N/A N/A	0.75	0.6	0 0 0 6
262		Exhaust	EV-101	1st Floor (Guess)	N/A	0 37	0.3	03
263		Exhaust	None	3rd Floor (Guess)	NA	1.53	11	11
264	E40	Exhaust	None (NIS)	3rd Floor (Guess)	N/A	0.19	0 1	0 1
265		Exhaust	EV-57 (Located in MR-12)	MR-12	N/A	0 04	0.0	0.0
266		Exhaust	EV-58 (Located in MR-12)	MR-12	N/A	0.04	0.0	OC
267 268		Exhaust Exhaust	EV-68 (Located in Substation #3) EV-79 (Located in Kitchen)	Substation #3 Kitchen exhaust system	N/A N/A	0 19 5.60	0 1 4.2	01 42
269		Exhaust	EV-82 (Located in Substation #7)	Substation #7	N/A	0.75	06	06
270		Exhaust	EV-98 (Located in Substation #2 & 6)	Substation #2 8 6	N/A	0.75	0.6	0.6
271		Chiller	Trane (690 Tons) - Building 2706	MCA Chilled Water	Tower CT-1 (Building 2706)	538 0	0.0	80 7
272		Chiller	Trane (690 Tons) - Building 2706	MCA Chilled Water - Standb		538 0	0.0	O(
273	CT-1	Tower	B.A.C. (1380 Tons) - Building 2706		Outdoor Air	596	0.0	8 ç
274 275	CT-1	Tower Tower	Thermal Care(200 Tons)-Build 2700 Roof Thermal Care(200 Tons)-Build 2700 Roof	Misc Chillers & DX Equipme Misc Chillers & DX Equipme		5.6	4.2	4:
276	CT-3	Tower	B.A.C. (210 Tons) - Building 2700 Roof	Misc Chillers & DX Equipme		5.6	4.2	<u>4.2</u> 4.2
277	CT-4	Tower	B.A.C. (210 Tons) - Building 2700 Roof	Misc. Chillers & DX Equipme		56	4.2	42
278		Tower	B A C - Building 2700 Roof	to be removed	N/A	0.0	0.0	0.0
279		Pump	Allis Charmers - Building 2706	MCA Chilled Water	N/A	746	0.0	11.2
280		Pump	Allis Charmers - Building 2706	MCA Chilled Water - Lag	N/A	746	0.0	0.0
281		Pump	Allis Charmers - Building 2706 Allis Charmers - Building 2706	MCA Chilled Water - Standb MCA Hot Water	N/A	74 6	0.0	<u>0</u> C
282		Pump	Allis Charmers - Building 2706		N/A	11.2 11.2	8.4	67 67
284		Pump	Allis Charmers - Building 2706		N/A	11.2	0.0	6 6
285			Allis Charmers - Building 2706	MCA Condenser Water	N/A	18 7	0.0	9 4
286	CWP-2	Pump	Allis Charmers - Building 2706	MCA Condenser Water - La	N/A	18 7	0.0	0.0
287		Pump	Allis Charmers - Building 2706		N/A	18 7	0.0	0 0
288		Pump	PACO - Building 2700	Cooling Tower #1	N/A	14 9	11.2	11.2
289 290			PACO - Building 2700 PACO - Building 2700		N/A N/A	14 9	37	7.5
291		Pump _	PACO - Building 2700	Cooling Tower #2 - Lag	N/A	14 9	11.2 3 7	11.2 7.5
292		Pump	PACO - Building 2700	Cooling Tower #3	N/A	149	11.2	112
293		Pump	PACO - Building 2700	Cooling Tower #3 - Lag	N/A	14 9	3 7	7 5
294		Pump	PACO - Building 2700	Cooling Tower #4	N/A	14 9	11.2	11.2
295		Pump	PACO - Building 2700	Cooling Tower #4 - Lag	N/A	149	3 7	7.5
296		Pump	Aurora - Building 2700	Boiler Feedwater	N/A	18 7	140	14 0
297			Worthington - Building 2700		N/A	18 7	0.0	00
298 299		Pump Pump	Ingersol Rand - Building 2700 Aurora - Building 2700		N/A	18 7	00	o c
300		Pump	Aurora - Building 2700		N/A	37	- <u>28</u>	2 8 2 8
300	<u> </u>	unip	Patrona - Dallotting 2700	Inningipale	P	11	28	∠. ^t

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - ALL FLOORS & BUILDING 2706 HVAC EQUIPMENT

TABLE 5.6.2.2

							Winter Billi	ng Mo	nths	Inte	rmediate E	illing	Months	T s	Summer B	ittina N	lonths	1
	Cooling Equipment	Total	Winter	intermed.		Of	f-Peak	Or	n-Peak		f-Peak		n-Peak		f-Peak		n-Peak	
Area	Field	Connected				hrs/		hrs/		hrs/		hrs/		hrs/		hrs/		Demand
Served	Data/Reference/(Location) N/A	0 25	KVV/month 0 2	kW/month 0.2	0 2	day 12	kWh/Mo 2 89	Gay	kWh/Mc 39	day 12	kWh/Mo 2 89		kWh/Mo		kWh/Mo 89		kWh/Mo 39	kW/Yr.
wn	N/A	1 49	11		11						3 134			12		8 2		
wn	N/A	1 49	11	11	11			2			3 134			3		2		
wn	N/A	1 49	11	11	11	3	3 134	2			3 134			3		2		9
oor	N/A	0.25	0.2	0.2	02			2			3 22		2 10	3		2		
30r	N/A	2.24	17	17.	17	12		8				8		12		8		13
70C	N/A N/A	1 49 0 37	1.1 03	11	03	12				12				12		2 8		
oor	N/A	0 19	01	01	01	12		8		12				12		8		
or	N/A	0 37	0.3	0.3	03	3		2		- :		}		3		2		2
wn	N/A	0 00	0 .0	0.0	0.0) 0	0	0					0		0		C
wn	N/A	0 00	0.0	00	0.0			0						. 0		0		
oor 3, 33, & 43	N/A	0.37	0.3	03	03	12		- 8		12				12		8		2
33, 6, 4 3	N/A	0.37	0.3	03	0.3	12		<u>8</u>		12		<u>E</u>		12		8 2		2
00r	N/A	0.07	0.5	01	0.1	12		8		12				12		. 8		
100	N/A	0.56	0.4	0.4	0.4	12		8		12				12		. 8		3
2D202	N/A	3 52	2.6	2.6	26	12	1,268	8	563	12	1,268	8	563	12		8	5 63	21
300	N/A	1 49	1.1		11	3		2		3		2		3		2		9
JOC	N/A N/A	0 37	0.6	03	03	12		8		12		8		12		<u>8</u>		2
100	N/A N/A	0 56	0.4	06	06	12		8		12		8		$-\frac{12}{3}$		8 2	119 22	4
wn	N/A	0 19	0.1	01	01	3		2		- 3		2		3			8	ر 1
or	N/A	0 15	0 1	01	01	3	13	2	6	3	13	2	6	3		2	6	1
	N/A	0.56	0.4	04	04	12		8		12		8		12		8	90	3
or (Guess)	N/A	0.37	0.3	0.3	03	12		8	***	12		8		12		. 8	60	2
wn	N/A N/A	0.00	00	00	00	0		0 0		0		0		0		- 0	0	0
wn	N/A	0.00	00	00	00	0		0		- 0		- 0		0		- 0		
ient	N/A	0.56	0.4	0.4	04	12		8		12		8		12		8	90	3
oor	N/A	0.25	0.2	0.2	0.2	3		2		3		2		3		2	10	1
or (Guess)	N/A	0 19	0 1	0.1	01	12		8		12		8		12		8	30	
or (Guess) or (Guess)	N/A N/A	0.56	0.6	04	0.6	12		8 2		12		8		12		<u>8</u>	90	3
OI (GOESS)	N/A	0.75	0.6	06	0.6	3		2		3		2		3		2	30 30	4
wn	N/A	0.00	0.0	00	0.0	0		0		ő				0			0	
or (Guess)	N/A	0 37	0.3	03	0.3	12		8	60	12	134	8		12	134	8		2
or (Guess)	N/A	1.53	1.1	11.	11	12	4	8	*	12		8		12	549	8	244	9
or (Guess)	N/A N/A	0.19	01	0.0	01	$-\frac{3}{3}$		2	8	3		2		3		2	<u>8</u>	
	N/A	0 04	0.0	00.	00	3		2	·	3		$-\frac{2}{2}$		3	3	2		0
ition #3	N/A	0.19	0.1	01	01	3		2	7	3		2		3		2	— - 	1
1 exhaust system	N/A	5.60	4.2	4.2	42	3		2	224	3		2		3		2	224	34
ition #7	N/A	0.75	06	0.6	06	3		2	30	3		2		3	67	2	30	4
ition #2 & 6 .hilled Water	N/A Tower CT-1 (Building 2706)	0 75 538 0	9 O	80 7	0.6 403.5	3		. 2		3		2		3	67		30	222
	Tower CT-1 (Building 2706)	538 0	00	00	0.0	- 0		0				$-\frac{2}{0}$	21,520	3	48,420 0	6 0	64,560	323 0
ondenser Water	Outdoor Air	59 6	00	89	44 7	0				1		4			14,304	8	9,536	36
hillers & DX Equipme	Outdoor Air	5 6	4.2	4.2	42	2	3 36	4		4		- 6		6	1,008	8	896	34
hillers & DX Equipme		5.6	4.2	4.2	4.2	2		4		4		- 6		6	1.008	8	896	34
hillers & DX Equipme		5.6	4.2	4.2	4.2	2		4		4		6		6		8	896	34
Chillers & DX Equipme	IN/A	56	4.2	4.2	4.2	2		-4	44 8	-40		<u>6</u>		6	1,0 08	<u>8</u>	896	34
hilled Water	N/A	746	00	11.2	56 0	0.0		0		4		3			26,856	8	11,936	45
hilled Water - Lag	N/A	746	0 .0	0.0	56 0	0.0	0	0		1	2,238	_ 1		3		2	2,984	0
hilled Water - Standb		746	0 .0	0.0	0.0	0 .0		0	0	0	0	0	0	0	0	0	0	0
lot Water	N/A	11.2	8 4	67	0.0	12.0	·	8	1,792	9		6		0	0	0	0	60
lot Water - Lag	N/A :	11.2	0.0	00	0.0	0 .0		0	448	$\frac{3}{0}$	1,008	2	448	0	0	0	허	
ondenser Water	N/A	18.7	0.0	94	14.0	0.0		0		6		<u>0</u> 8		10	5,610	12	4,488	<u>0</u>
ondenser Water - La		187	0.0		14 0	0.0		- 0		1		1		3		4	1,496	
ond Wtr - Standby	N/A	18 7	0.0	0.0	0.0	0.0	0	0	0	0		Ö		0	0	. 0		
g Tower #1	N/A	14 9	11.2	11.2	11.2	12		8		12		8		12	5,364	В	2,384	89
3 Tower #1 - Lag	N/A	14 9	37	7.5	89			1_	298	3		2		4	1,788	3	894	45
7 Tower #2 7 Tower #2 - Lag	N/A N/A	14 9	11.2 3 7	- <u>11.2</u> 7.5	11.2 8.9	12		- 8	2,384 298	<u>12</u>		8		12	5,364	- 8.	2,384	89
Tower#3	N/A	14 9	11.2	11.2	11.2	12				<u>3</u>		2 	596 2,384	12	1,788 5,364	<u>3</u>	2.384	45 89
Tower #3 - Lag	N/A	14 9	37	7.5	8.9	1		1	298	3		- 2	596	4	1,788	3	894	45
Tower #4	N/A	14 9	11.2	11 2	11.2	12		8		12		8		12	5,364	8	2.384	89
Tower #4 - Lag	N/A	14 9	37	7.5	8.9	1		1	298	3	1,341	2	596	4	1,788	<u>3</u> 	894	45
Feedwater	IN/A	18 7	140	14.0	140	12		. 8		12		8		12	6.732			112
Feedwater Feedwater	N/A N/A	18 7	00	00.	00	0.0		- 0		0		0		0.	0	0_	0	0
nsate	N/A	18 7 3 7	2.8	28	28	3.0		0	148	<u>0</u> 3		2	148	0 3·	323	0	148	22
nsate	IN/A	37	2.8	28	2.8	3.0			148		33 3	$-\frac{2}{2}$	148	3.	_ 33 3	2.	148	22
									,,,,,				170	ب		4	170	



ENT OF THE ARMY S & BUILDING 2706 HVAC EQUIPMENT

onths		mediate E				ummer Bi							,					
n-Peak	hrs/	l-Peak	Or hrs/	1-Peak	hrs/	-Peak	hrs/	n-Peak	Demand	Non-S Off-Peak	ummer On-Peak	Cost	Demand	Sun Off-Peak	on-Peak	Cost	Annual Cost	
_kWh/Mo		kWh/Mo		kWh/Mo	ſ	kWh/Mo		kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	\$	No.
3 39	12		Ε	39	12				1	709	315	\$79		354	15 8	\$40	\$120	226
2 60	3		2		3		2		9	1,074	477	\$176 \$176	4	537 537	239	\$92	\$268	
? 60 ? 60	3		2		3		$-\frac{2}{2}$		9	1,074	477	\$176	4	537	239 239	\$92 \$92	\$268 \$268	228
2 10	3				3		2		1_	177	79	\$29	1	89	39	\$15	\$44	230
3 35 8	12				12				13	6,445	2,865	\$721	7.	3,223	1,432	\$367	\$1,089	231
3 60	3		3		3		2		9	1,074 1,074	<u>477</u>	\$176 \$120	4	537 537	239	\$92	\$268	232
3 60	12		8		12		8		1	537	239	\$60	1	269	239 119	\$61 \$31	\$181 \$91	233 234
? 15	3		2		3		2	15	2	26 9	119	\$44	1	134	60	\$23	\$67	235
) 0	0	~			0		0		0	0	0	\$0	0	0	0	\$0	\$0	236
) 0 3 6 0	12		<u>0</u>		12		<u>0</u>		2	1,074	0 477	\$0 \$120	0	<u>0</u> 537	239	\$0 \$61	\$0 \$181	237
3 60	12				12		8		2	1,074	477	\$120	1	537	239	\$61	\$181	239
2 15	3		2		3		2		2	269	119	\$44	1	134	60	\$23	\$67	240
3 12	12		8		12		. 8		0 3	215 1,611	95 716	\$24 \$180	$\frac{0}{2}$	<u>107</u> 806	48	\$12	\$36	241
3 90 3 5 63	12		8		12 12		<u>8</u>		21	10,141	4,507	\$1,135	11.	5,070	2,253	\$92 \$578	\$272 \$1,713	242
, 60	3		2		3		2	60	9	1,074	477	\$176	4	537	239	\$92	\$268	244
60	12		8		12		8		2	1,074	477	\$120	1	537	239	\$61	\$181	245
119	12 3		- 8		12		8 2	119	- 4	2,148 403	955 179	\$240 \$66	2.	1,074 201	477 90	\$122 \$35	\$363 \$101	246
8	3		2		3	17	2	8	1	137	61	\$22	1	69	31	\$12	\$34	248
, 6	3	13	2	- 6	3		2	6	1	106	47	\$17	0	53	23	\$ 9	\$ 26	249
90 60	12		8		12	201 134	- 8 8		3	1,611 1,074	716 477	\$180 \$120	2.	806 537	358	\$92	\$272	250
) 0	12 0		8		12		0		0	1,074	0	\$0	0.	0	239	\$61 \$0	\$181 \$0	251 252
) 0	0	0	0	. 0	٥	0	0		0	0	0	\$0	0	0	0	\$0	\$0	253
) 0	0		0		0		<u> </u>		0	1 611	716	\$0	0	0	0	\$0	\$0	254
90	12		<u>8</u>		12 3	201	8 2		3	1,611 177	710	\$180 \$29	1	806 89	358 39	\$92 \$15	\$272 \$44	255 256
30	12		8		12	67	8		1	537	239	\$60	1	269	119	\$31	\$91	257
3 90	12		B		12		8		3	1,611	716	\$180	2	806	358	\$92	\$272	258
30	3		2		3		<u>2</u>	30	4	537 537	239 239	\$88 \$88	2	269 269	119	\$46 \$46	\$134 \$134	259 260
0	0		- 6		ö	0	0		0	0	0	\$0	0	0	0	- S 0	\$0	261
60	12		8	60	12	134	8		2	1,074	477	\$120	1.	537	239	\$61	\$181	262
3: 244	12		- 8		<u>12</u> 3		<u>8</u>	244	9;	4,394 137	1,953 61	\$492 \$22	5	2, 1 97	977	\$250	\$742	263
3 8	3		2		<u>3</u>		2	1	0	27	12	<u>\$22</u> \$4	-	13		\$12 \$2	\$34 \$7	264 265
1	3	3	2		3	3	2	1	0	27	12	\$4	0	13	6	\$2	\$7	266
7	3		- 2		3		2		1 24	134 4,028	1700	\$22	1	67	30	\$12	\$34	267
30	<u>3</u>		<u>2</u>		<u>3</u>		$-\frac{2}{2}$	30	34	537	1,790 239	\$660 \$88	17	2,014 269	895 119	\$346 \$46	\$1,006 \$134	268 269
30	3	67	2		3	67	2	30	4	537	239	\$88	2	269	119	\$46	\$134	270
0	1			21,520	3		6		3 23	64,5 60	86,080	\$12,941	1,614	193,680	258,240	\$45,710	\$58,650	271
) 0	- 0	1,788	- 0	4,768	0 8	14,304	<u>0</u>	9,536	36	7,152	19,072	\$2,123	179	57,216	38,144	\$0 \$7,992	\$10,115	272 273
448	4	672	6		6	1.008	8	896	34	4,032	4,480	\$855	17	4.032	3,584	\$667	\$1,522	274
448	4	672	- 6	672	6	1,008	8	896	34	4,032	4,480	\$855	17	4,032	3,584	\$667	\$1,522	275
448	4		6		6	1,008	<u>8</u>	896 896	34	4,032 4,032	4,480 4,480	\$855 \$855	17	4,032 4,032	3,584 3,584	\$667 \$667	_ \$1,522	276
0	- 0	0/2	0	0	0	0	0	0	0	0	0	\$0	0	4,032	3,584	\$0	\$1,522 \$0	277
0	4	8,952	3	4,476	12	26,85 6	8		45	35,808	17,904	\$3,903	224	107,424		\$12,243	\$16,146	279
}	1		1		3		2	2,984	0	8,952	5,9 68	\$991 \$0	224	26,8 56	11.936	\$4,608	\$5,599	280
1,792	9	3.024	<u>6</u>	1,344		0:	- 6	0	60	28,224	12,544	\$3,172	0	0	0	\$0 \$0	\$0 \$3,172	281 282
448	3	1,008	2	448	0	0	0	0	60	9,408	3,584	\$1,349	0	0	0	\$0	\$1,349	283
) 0	0		0	0	0	0	0	0	0	13.464	11 068	\$2.017	0	0	0.	\$0	\$0	284
} 0	6		<u>8</u>		10		12 4	1,496	37	13,464 2,244	11,968 1,496	\$2,017 \$248	<u>56</u> 56	22,440 6,732	17,952 5,984	\$3,222 \$1,372	\$5,239 \$1,620	285 286
5 0	ō	0			0	0	0	0	0	0	0	\$0	0	0,732	0	\$1,372	\$0	287
2.384	12		8		12	5,364	8	2,384	89	42,912	19,072	\$4,802	45	21,456	9,536	\$2,445	\$7,247	288
298	12		2 8		12		8	894 2,384	89 B9	7,152 42,912	3,576 19,072	\$1,077 \$4,802	36 45	7,152	3,576	\$1,036	\$2,113	289
3 2,384 1 298	3		2	2,384 596	12		3	894	45	7,152	3,576	\$1,077	36	21,456 7,152	9,536 _ 3,576	\$2,445 \$1,036	\$7,247 \$2,113	290 291
2.384	12		8		12		8	2,384	89	42,912	19,072	\$4,802	45	21,456	9,536	\$2,445	\$7,247	292
298	3		2		4	1,788	3	894	45	7,152	3,576	\$1,077	36	7,152	3,576	\$1,036	\$2,113	293
3 2.384 1 298	12		8	2,384 596	12	5,364 1,788	<u>8</u>	2,384 894	89 45	7,152	19,072 3,576	\$4,802 \$1,077	36	21,456 7,152	9,536	\$2,445	\$7,247	294
3 2.992	12	1,341 6,732	- 2	2.992	12	6,732	3 B	2.992	112	53,856	23,936	\$6.027	5 6	26,928	<u>3,576</u> 11,968	\$1,036 \$3,069	\$2,113 \$9,096	295
) 0	0	0	0	Ō	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	297
) 0	0	0	0	0	0	0	0	- 0	0 /	0	0 .	\$0	0	0	0	\$0	\$0	298
148	3 1	333 333	$-\frac{2}{2}$	148	3	333 333	2	148	22	2,664 2,664	1,184 1,184	\$436 \$436	11	1,332 1,332	592	\$229 \$229	\$665	300
140]				1							<u></u>	<u> </u>		1,004	592	4443	\$665	300

FT. MONMOU BUILDING 2700 ELECTRIC MODE

			HVAC Airside Equipment - General Inform	nation	Cooling Equipment	Total	Winter	intermed.	Sum
HVAC	Design/Site	Equip.	Field	Area	Field	Connected	Demand	Demand	Den
item	Designatio	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/n
301	CP-7	Pump	Aurora - Building 2700	Condensate	N/A	37	2.8	2 &	_
302	CP-8	Pump	Aurora - Building 2700	Condensate	N/A	3 7	2.8	28	•
303	CP-1 (New)	Pump	unknown - Building 2706	Condensate	N/A	44	33	3 3	•
304	Misc	Pumps	unknown - Building 2706	Vanous	N/A	149	11.2	112	•
305	•	(4)Coolers	unknown - Building 2700 Cafetena	Cafetena	Condenser	3 7	28	28	
306		Refngerato	unknown - Building 2700 Cafetena	Cafetena	Condenser	15	1 1	11	
307		Reingerato	unknown - Building 2700 Cafetena	Cafetena	Condenser	0.8	0.6	06	•
308		Freezer	unknown - Building 2700 Cafetena	Cafetena	Condenser	1.2	09	0.9	
309		Proc Chille	Edwards - Building 2700 Roof	unknown process	Condenser	112	8 4	8 4	
310	-	Lighting	unknown - Building 2700	Basement Level	N/A	126.0	75 6	75 6	
311	·	Lighting	unknown - Building 2700	First/Mezzanine Floor Levels	N/A	349 0	209 4	209 4	· – :
312		Lighting	unknown - Building 2700	Second Floor Level	N/A	423.0	253 8	253 8	
313		Lighting	unknown - Building 2700	Third Floor Level	N/A	414.0	248 4	248 4	- :
314		Lighting	unknown - Building 2700	Fourth Floor Level	N/A	492 0	295 2	2 95 ?	
315		Misc Equi	unknown - Building 2700	Basement Level	N/A	100 0	25 0	25 0	
316		Misc Equi	unknown - Building 2700	First/Mezzanine Floor Levels	N/A	360.0	90 0	900	
317		Misc Equi	unknown - Building 2700	Second Floor Level	N/A	609.0	152.3	152 3	
318		Misc. Equi	unknown - Building 2700	Third Floor Level	N/A	413 0	103 3	103 3	
319		Misc Equi	unknown - Building 2700	Fourth Floor Level	N/A	676 0	169 0	169.0	
				TOTALS		7,592	2,642	3,156	

Note: The total connected kith loads for the McCa notern building EVALI equipment do not include the equivalent tons of cooling shown in Dection 3. The chiller incorporates there leads.

Winter Months: October, November, December, January, February, March, April, May Summer Months: June, July, August, September

Winter Months October, November, December, January, February, March, April, May Summer Months: June, July, August, September

Incremental Demand Cost, \$7kW Off-Peak Incremental Usage Cost, \$7kWh On-Peak Incremental Usage Cost, \$7kWh

	Winter	Summer
ncremental Demand Cost, \$/kW	\$8.31	\$9.22
MT-Peak Incremental Usage Cost, \$/kWh	\$0.062	\$0.063
On-Peak Incremental Usage Cost, \$/kWh	\$0.072	\$0.072

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FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - ALL FLOORS & BUILDING 2706 HVAC EQUIPMENT

TABLE 5.6.2.2

_						W	inter Billi	ng Mo	nths	Inter	mediate i	Billing I	Months	S	ummer Bi	lling M	onths			
_	Cooling Equipment	Total	Winter	Intermed.	Summer	Off	Peak	Or	1-Peak	Off	-Peak	On	-Peak	Off	Peak	Or	-Peak		Non-S	umme
	Field	Connected	Demand	Demand	Demand	hrs/	1	hrs/		hrs/		hrs/		hrs/	1	hrs/		Demand	Off-Peak	On-F
	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWF
_	N/A	3 7	2.8	28	28	30	3 33	2	148	3	333	2	148	3	333	2	148	22	2,664	
	N/A	37	28	28	28	30	3 33	2	148	3	333	2	148	3	333	2	148	22	2,664	
	N/A	44	3 3	3 3	3 3	30	396	2	176	3	396	2	176	3	396	2	176	26	3,168	
	N/A	149	_112	11.2	11 2	30	1.341	2	596	3	1 341	2	596	3	1 341	2	596	89	10,728	
	Condenser	3.7	2.8	2.8	2.8	12	1,332		592	12	1,332	8	592	12	1.332	8	592	22	10,656	
_	Condenser	1.5	1.1	1.1	1.1	12	540	8	240	12	540	8	240	12	540	8	240	9	4,320	
	Condenser	0.8	0.6	06	0.6	12	270	8	120	12	270	8	120	12	270	8	120	5	2,160	
	Condenser	1.2	0.9	09	0.9	12	432	8	192	12	432	8	192	12	432	8	192	7	3,456	
_	Condenser	11 2	8.4	8 4	84	10	3 360	8	1,792	10	3,360	8	1,792	10	3,360	8	1,792	67	26 880	1.
	N/A	126.0	75 6	75 6	756	2	7,560		20,160	2	7,560	8	20,160	2	7,560	8	20,160	6 05	60,480	16
els	N/A	349 0	209 4	209 4	209 4	2	20,940	8	55,840	2	20,940	8	55,840	2	20,940	8	55,840	1,675	167,520	44
_	N/A	423.0	253 8	253 8	253.8	2	25,380	8	67,680	2	25,380	8	67,680	2	25,380	8	67,680	2,030	203,040	54
Ξ	N/A	414.0	248 4	248 4	248 4	2	24,840	8	66,240	2	24,840	8	66,240	2	24.840	8	66,240	1,987	198,720	52
	N/A	492 0	295 2	2 95 2	295 2	2	29 520	8	78,720	2	29,520	8	78.720	2	29,520	8	78,720	2,362	236 160	62
_	N/A	100 0	25 0	25.0	25.0	2	6.000	4	8,000	2	6,000	4	8,000	2	6,000 i	4	8,000	200	48,000	_ ε
els	N/A	360.0	90 0	90 0	90.0	2	21,600	4	28,800	2	21,600	4	28,800	2	21,600	. 4	28,800	720	172,800	23
	N/A	609.0	152 .3	152.3	152.3	2	36,540	4	48,720	2	36,540	4	48,720	2	36,540	. 4	48,720	1.218	292,320	38
_	N/A	413 0	103 3	103 3	103.3	2	24,780	4	33,040	2	24,780	4	33,040	2	24,780	4	33,040	826	198,240	2€
_	N/A	676 0	169 0	169 0	169 0	2	40 560	4	54 080	2	40,560	4	54 080	2	40 560	4	54,080	1,352	324 480	43
5		7,592	2,642	3,156	3,799	1,894	461,853	1,711	688,523	1,937	551,002	1,791	765,951	1,912	705,897	1,863	899,287	23,192	4,051,422	5.81
			Manager	Billing Demand	A				1 dive	meteod Marife	e On-Frak Arri							Literatural Pr	ling Off-PrekAmeny	
	The Hope Road/Charles Wood electric billing data to show		4,7 th	4.701	6 977		e.	120		Vin Kirini kutitili	1,031,400	Jun	1,168,000		ſ -	[Arc	1,215,000	Apr	1,485 000	mara.
	at the right for comparison to the data calculated for Build	ding 2700	4 726	4,957	7,020 6,757			Face	1.000 0000		990 000	Iul	1 629,000		1	lan	1,170.000	May	1,314,000	1
		:	4.697	4,482	6.737			1 eb	1.044,000	Chri	981.000.	Aug	1.305.000		h	i eb	1,449,000	Oct	1,386,00X)	

Winter Months October, November, December, January, February, March, April, May Summer Months June, July, August, September

	Winter	Summer
Incremental Demand Cost, \$/kW	\$8.31	\$9.22
Off-Peak incremental Usage Cost, \$7kWh	\$0.062	\$0.063
On-Peak incremental Usage Cost, \$7kWh	\$0.072	\$0.072



THE ARMY ILDING 2706 HVAC EQUIPMENT

Intermediate Billing Months Summer Billing Months							onths										
Off	f-Peak	On	-Peak	Off	-Peak	Qi	1-Peak		Non-S	ummer			Sun	nmer		Annual	
hrs/		hrs/		hrs/		hrs/		Demand	Off-Peak On-Peak		Cost	Demand	Off-Peak	On-Peak	Cost	Cost	1
day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	qay	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	S	No.
3	33 3	2	148	3	3 33	2	148	22	2,664	1,184	\$436	11	1,332	592	\$229	\$665	30
3	333	2	148	3	333	2	148	22	2,664	1,184	\$436	11	1,332	592	\$229	\$665	30:
3	396	2	176	3	396	2	176	26	3,168	1,408	\$519	13	1,584	704	\$272	\$791	30:
3	1 341	2	596	3	1.341	2	596	89	10.728	4 76R	\$1,758	45	5 364	2 384	\$920	\$2 678	30-
12	1,332	8	592	12	1,332	8	592	2 2	10,656	4.736	\$1,192	11	5.328	2.368	\$607	\$1,800	30
12	540	8	240	12	540	- 6	240	9	4,320	1,920	\$483	5	2,160	9 60	\$246	\$730	306
12	270	8	120	12	270	8	120	5	2,160	96 0	\$242	2	1,080	480	\$123	\$365	30
12	432	8	192	12	432	8	192	7	3,456	1,536	\$387	4	1,728	768	\$197	\$584	308
10	3,360	8	1,792	10	3,360	9	1,792	67	26 880	14,336	\$3,274	34	13 440	7,168	\$1,670	\$4 944	309
2	7,560	8	20,160	2	7,560	8	20,160	605	60,48 0	161,280	\$20,469	302	30.240	80,640	\$10,523	\$30,992	310
2	20,940	8	. 55,840	2	20,940	8	55,840	1,675	167,520	446,720	\$56,697	838	83,760	223,360	\$29,147	\$85.844	311
2	25,380	8	67,680	2	25,380	8	67,680	2,030	203,040	541,440	\$68,718	1,015	101,520	270,720	\$35,328	\$104 046	312
2	24,840	8	66,240	2	24.840	8	66,240	1,987	198,720	529,920	\$67,256	994	99,360	264,960	\$34,576	\$101,832	313
2	29,520	8	78,720	2	29,520	8	78,720	2,36?	236 160	629 760	\$79,928	1 181	118 080	314 880	\$41,090	\$121 018	314
2	6,000	. 4	8,000	2	6,0 00	4	8,000	200	48.000	64,000	\$9,289	100	24,000	32,000	\$4,742	\$14,031	315
2	21,600	4	28,800	2	21,600	. 4	28,800	720	172,800	230,400	\$33,440	3 60	86,400	115,200	\$17,072	\$50.512	316
2	36,540	4	48,720	2	36,540	4	48,720	1,218	292,320	389.760	\$56.56 9	609	146.160	194,880	\$28,880	\$85 449	317
2	24,780	4	33,040	2	24,780	4	33,040	826	198,240	264,320	\$38,3 63	413	99,120	132,160	\$19,585	\$57 948	318
2	40.560	4	54.080	2	40.560	4	54,080	1,352	324 480	432 640	\$62,793	6 76	162 240	216 320	\$32 057	\$94,850	319
1.937	551,002	1.791	765.951	1.912	705.897	1.863	899,287	23,192	4.051,422	5,817,896	\$866,560	15,197	2.823.588	3.597.149	\$577.413	\$1,443,973	$\overline{}$

cal Military	Cimilitat Arres	<u></u>	
Apr	1,031,400	un.	1.364.000
Max	990.000	Tul.	1.629,000
Oct	981.000)	Aug	1.303,000
Nin	1,116,000		1,233,000
	1,029,600		1,183,730,
	4118.41		3,313 cux
	intermediate		Summer

		•	Historical B	ulling Off-PeakAperages		
	1 km	1,215,000	Ajır	1,485,000°	iun	1.843 000
1	len	1,170,0001	May	1.314.000	Jul	2.403,000
+	teb	1,449,000	Oct	1.366,000	Aug	1,854,000
÷	Mar	1,296,000	Nin	1,566 000	Sep	1,656 000
	I.	1,262,500		1,437,750		1,939,500
614	**	3.130.000		5751 (0)		7,758,000

82-Jul-94



5.6.3 Comparison

The results of the electric demand, usage and cost for Building 2700 when compared to the same values from the Hope Road/Charles Wood Area data is as follows in Table 5.6.3.1.

The results show that the electrical costs for Building 2700 constitute approximately 54% of the billing for the large area. Of that, the on-peak usage and demands are slightly higher because the building is basically operated during the day only, while the usage and demands go up at night in the outlying areas primarily made up of relatively small buildings, and large residential areas with barracks and homes.

Included in this section are two comparisons of HVAC system totals for DOE Modeling results versus the Electric Model results. MCA hot and chilled water systems analysis is within 4% of the estimates developed in the Electric Model. Comparisons of the areas which utilize miscellaneous cooling systems are not as accurate, ±25%. This is primarily due to the large quantity of units and spaces which are conditioned. DOE has limitations as to the quantity of systems and zones which can be modeled. These limitations do not provide praticality in modeling every 1 ton to 5 ton unit. To save space and time, large areas were modeled under one-cooling system rather than the multiple systems that exist whereas the Electric Model is modeled on a much smaller scale. However, a variance of less than 25% is still acceptable and within the confines of this study. Because DOE can provide a wide array of energy

conservation simulations, these models and results will be utilized in ECOs where applicable.

Table 5.6.3.1, Electric Modeling Results Comparison Building 2700 vs Hope Road/Charles Wood Area

	Billing - Hope Road/ Charles Wood Area	Building 2700 Electric Model	%
Summer Demand (kW/mo)	6,594	3,799	58%
Summer On-peak Usage (kWh/mo)	1,383,750	899,287	65%
Summer Off-peak Usage (kWh/mo)	1,939,500	705,897	36%
Summer Cost (\$/mo)	\$277,058	\$144,353	52%
Summer Total Cost (\$)	\$1,108,232	\$577,410	52%
Intermediate Demand (kW/mo)	4,751	3,156	66%
Intermediate On-peak Usage (kWh/mo)	1,029,600	765,951	74%
Intermediate Off-peak Usage (kWh/mo)	1,437,750	551,002	38%
Intermediate Cost (\$/mo)	\$200,050	\$115,263	58%
Intermediate Total Cost (\$)	\$800,200	\$461,060	58%
Winter Demand (kW/mo)	4,709	2,642	56%
Winter On-peak Usage (kWh/mo)	1,012,950	688,523	68%
Winter Off-peak Usage (kWh/mo)	1,282,500	461,853	36%
Winter Cost (\$/mo)	\$196,945	\$101,373	51%
Winter Total Cost (\$)	\$787,780	\$405,490	51%
Total Demand (kW/yr)	64,216	38,388	60%
Total On-peak Usage (kW/yr)	13,705,200	9,415,044	69%
Total Off-peak Usage (kW/yr)	18,639,000	6,875,008	37%
Total Cost (\$/yr)	\$2,696,200	\$1,443,960	54%

6.0 ENERGY CONSERVATION OPPORTUNITIES

6.1 General

The items discussed in this section of the report are the result of investigation of many energy cost reduction strategies.

Existing, discusses the current operational energy levels and approximate costs.

Proposed, presents a new concept designed to save energy; however, it should be understood that the actual design has not yet been performed. Arrangements and quantities may change somewhat during final design.

Construction Costs, covers materials, labor, and indirect costs needed for a complete project, including associated engineering design and construction management costs. Escalation is not included. Costs are in 1996 dollars.

Savings, shows an expected level of annual energy and cost savings; however does not include price increases of various energy sources or interactive savings. The ECOs are calculated on a stand alone basis.

Operation/Maintenance Savings, estimate of the proposed maintenance savings resulting from implementing the ECO.

Discussion, notes the results of the life cycle costs (LCCID) summary.

6.2 ECO List

Below is Entech's list with explanations for the ECOs considered for evaluation with this study. Additional ECOs may be added if considered appropriate for the building and this study in general.

ECOs not evaluated will include lighting issues which are presently being studied by Fort Monmouth personnel through other means and the possibility of converting Building 2705 to a geo-thermal heat pump system which is being evaluated by Fort Monmouth with the assistance of the utility company.

Note: ECO -5 is included as an example for review.

ECO List

1. Steam Decentralization - Base Case

- Heating
 - Building 2700 AHU's and UH's converted to MCA 2-pipe hot water heating system/season.
 - Building's 2704 and 2705 converted to new boiler plants located in each building.
- --- Reheat
 - Building 2700 cleanrooms to new boiler on fourth floor (MR-#43).
 - Building 2705 reheat on new heating boiler.
- Kitchen Equipment Convert to gas appliances.
- Domestic Hot Water Convert to gas with existing distribution system.

Variations on the base case will be reviewed with specific changes being evaluated against the base. Each change or option will be looked at individually to see if it is beneficial or not to the base case. The options are limited and are listed below:

Base Case Options:

- a. New Steam Heating Boilers in Building 2700 basement area for steam loads considered essential for year round operation. (This is in addition to new cleanroom boilers on the fourth floor.)
- b. New Hot Water Boilers for Cleanroom (in lieu of new steam boiler).
- c. Operate Ceanrooms with MCA Hot Water supplied from Building 2706 (utility). Requires year round operation of proposed boilers for system, and the installation of dedicated supply and return piping from Building 2706.
- d. <u>Electric Domestic Hot Water Generator</u> with existing central system.
- e. <u>Decentralize Domestic Hot Water System</u> with point of use electric water heaters.

The evaluation of the base case and it's options will determine the best answer for this ECO. Natural gas at \$7.50/mcf will be assumed for all existing and future fuel requirements.

- 2. Occupied/Unoccupied cycle for the MCA 2-pipe AHU's time clocks, (perimeter heat by fan coil units).
- 3. Reduce Building Infiltration.
- 4. Replace Existing Central Chillers.
- 5. <u>Convert Specific Air Cooled Chillers to Water Cooled Chillers.</u>
- 6. <u>Free Cooling</u> for specific chiller loops using a heat exchanger with cooling tower water bypassing the chillers.
- 7. <u>2-Speed Fan Operation</u> for Central Cooling Tower Optimization.
- 8. Replace DHW Recirculation Pumps.

- 9. <u>Automated MCA HW Temperature Reset</u> based on outside air temperature.
- 10. Full Chilled Water Storage for central chiller plant
- 11. Partial Chilled Water Storage for central chiller plant.
- 12. <u>Variable Flow Primary-Secondary Chilled Water Distribution</u> (to replace pressure bypass and primary system with VFD's on secondary loop).

6.3 ECOs Evaluations

ECO-1 and Options A, B, C, D and E, and ECO-2 through 12 follow in detail.

Entech Engineering, Inc.

ECO-1 STEAM DECENTRALIZATION - BASE CASE

Existing.

The present installation at Fort Monmouth for supplying steam to Buildings 2700, 2704, 2705, and 2715 is housed in the basement of Building 2700. Underground piping supplies and returns steam and condensate, respectively to/from the other buildings. Section 4, Table 4.5.4 reflects that in recent years the plant produces approximately 51,070 mlbs/yr.

Building 2706 Boiler Plant

(MCA HW).

For the existing conditions of this ECO we will assume that the new boilers in Building 2706 are up and running thereby separating the MCA hot water load from the existing boiler plant. The MCA hot water load is estimated to be 5,500 mlbs/yr (5,500 mmBtu/yr).

Since this is now considered a hot water boiler operation for the MCA system, we can eliminate most of the losses (leaks and heat loss) associated with this system by assuming a slightly lower boiler efficiency than what is expected (82-84%) with this new installation, taking into account some reduction due to system inefficiencies (ie: heat loss).

For this ECO we will assume an 80% efficiency for the existing (new) hot water boilers, and for all future boilers analyzed in this ECO. Additional losses will be applied to those boilers in future evaluations that are steam.

The existing fuel consumption in Building 2706 associated with producing hot water for the MCA system is estimated to be 6,670 mcf. The cost for MCA hot water production is \$50,000.

Natural Gas (mcf)

(for MCA Hot Water) = $5,500 \text{ mmBtu/yr} \div .80 \text{ eff} \div 1.031$

mcf/mmBtu

Natural Gas (mcf) = 6,670 mcf/yr

Building 2700 Boiler Plant.

From Table 5.2.7.2, the steam production required to support the remainder of the loads excluding the MCA hot water is 44,700 mlbs/yr (44,700 mmBtu/yr). The efficiency associated with Boiler #3 utilizing a new gas train is estimated to be 76%, which is the same as the past use with No. 2 fuel oil. The fuel consumption associated with these loads is 63,720 mcf. The fuel cost for these loads is \$428,000.

Natural Gas (mcf)
(for Bldg 2700 plant) =
$$44,700 \text{ mmBtu/yr } x .76 \text{ eff} \div 1.031 \text{ mmBtu/mcf} = 63,720 \text{ mcf/yr}$$

The combined yearly totals for the two boiler plants for production, fuel and cost are as follows:

	Heating (mmBtu/yr)	Fuel (mmBtu/yr)	Fuel Nat. Gas (mcf/yr)	Fuel Cost (\$/yr)
Building 2706 BP (MCA HW)	5,500	6,875	6,670	\$50,000
Building 2700 Boiler Plant	44,700	58,820	57,050	\$428,000
Totals	50,200	65,695	63,720	\$478,000

Building 2700 and 2706 Boiler Plant

Electric Totals.

The electric demand and consumption totals for the pumps related to Building 2700 steam/heating systems are calculated next. The forced draft fans for both the old and newer boilers with the existing condition are included in the miscellaneous totals in the Electric Model. Also included in these totals are the domestic hot

water pumps. Future changes are not expected to impact these totals to any degree. Only new pumps, boiler fans, etc. will be evaluated in the future section of this ECO. The annual electric demand and usage totals for the existing pumps associated with the Building 2700 and 2706 boiler plants are 462 kW/yr and 200,862 kWh/yr. All at a yearly cost of \$17,068/yr. The summary is shown below. Also refer to Table ECO-1E following this page for the Electric Model impact.

Season	Demand (kW)	Off-Peak (kWh)	On-Peak (kWh)	Energy (mmBtu)	Cost (\$)
Non-Summer	348	105,312	46,208	517	\$12,813
Summer	114	33,840	15,040	167	\$4,255
Totals	462	139,152	61,248	684	\$17,068

The total energy cost to operate the two boilers and support equipment is approximately \$495,000/yr.

Operating and Maintenance

Cost.

The yearly operating and maintenance costs for the two plants is estimated to be approximately:

- 1) Building 2700 Continuous Operation/Monitoring (5 people) \$200,000/yr Equipment Maintenance (Boilers, pumps, etc.) \$200,000/yr
- 2) Building 2706 Daily Monitoring \$40,000/yr Equipment Maintenance \$50,000/yr

The one year cost for firing, operating and maintaining the two plants is estimated to be close to \$1 million.

Energy Cost	\$495,000
Operation/Maintenance	\$490,000
Total	\$985,000

FT. MO: BUILDING 2700 ELEC

			HVAC Airside Equipment - General Infor	mation	Cooling Equipment	Total	Winter	Interm
HVAC	Design/Site	Equip.	Field	Field	Connected	Demand	Dema	
kem	Designation	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/me
282	HWP-1	Pump	Allis Charmers - Building 2706	MCA Hot Water	N/A	11.2	8.4	
283	HWP-2	Pump	Allis Charmers - Building 2706	MCA Hot Water - Lag	N/A	11.2	8 4	
284	HWP-3	Pump	Allis Charmers - Building 2706	MCA Hot Water - Standby	N/A	112	0.0	
296	FWP-1	Pump	Aurora - Building 2700	Boiler Feedwater	N/A	187	14 0	1
297	FWP-2	Pump	Worthington - Building 2700	Boiler Feedwater	N/A	187	0.0	
298	FWP-3	Pump	ingersol Rand - Building 2700	Boiler Feedwater	N/A	18 7	0.0	
299	CP-1	Pump	Aurora - Building 2700	Condensate	N/A	3 7	2.8	
300		Pump	Aurora - Building 2700	Condensate	N/A	37	2 8	
301	CP-7	Pump	Aurora - Building 2700	Condensate	N/A	37	28	
302	CP-8	Pump	Aurora - Building 2700	Condensate	N/A	37	28	
303	CP-1 (New)		unknown - Building 2706	Condensate	N/A	4.4	3.3	
				TOTALS		109	45	

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - EXISTING HEATING SYSTEM TOTALS

TABLE ECO-1-E

	Winter Billing Months								ths	Intermediate Billing Months					ummer Bi				
	Cooling Equipment	Total	Winter	intermed.	Summer	Off-	Peak	On-	Peak	Off	-Peak	On-	Peak	Off	Peak	0	n-Peak		Non
Area	Field	Connected	Demand	Demand	Demand	hrs/	i	hrs/		hrs/	1	hrs/		hrs/	1	hrs/		Demand	Off-Peak
Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	dav	kWh/Mo	day	· kWh/Mo	kW/Yr	KWH/Yr
Hot Water	N/A	112	8 4	6 7	0.0	12 0	4.032	8	1,792	9	3.024	6	1,344	0	0	0	0	60	28.22
Hot Water - Lag	N/A	11.2	8 4	6 7	0.0	40	1,344	2	448	3	1.008	2	448	0	0	0	0	60	9 40
Hot Water - Standby	N/A	11.2	00	00	0.0	0.0	0	0	0	0	0	0	0	0	0	ō	0	0	
Feedwater	N/A	18 7	14 0	14 0	14 0	12	6,732	8	2.992	12	6.732	8	2.992	12	6.732	8	2,992	112	53,85
Feedwater	N/A	187	00	00	0 0	0.0	0	0	0	0	0	0	0	0	0	Õ	0	0	
Feedwater	N/A	18 7	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	
nsate	N/A	3 7	28	28	28	30	333	2	148	3	333	2	148	3	333	2	148	22	2,6€
nsate	N/A	3 7	28	28	28	30	333	2	148	3	333	2	148	3	333	2	148	22	2.6€
nsate	N/A	37	28	2 8	2.8	30	333	2	148	3	333	2	148	3	333	2	148	22	2,6€
nsate	N/A	3 7	28	28	2 8	3 0	333	2	148	3	333	2	148	3	333	2	148	22	2,6€
	N/A	44	3.3	3 3	3 3	3.0	396		176	3	396		176	3	396	2	176	26	3.16
TOTALS		109	45	42	28	43	13,836	28	6,000	39	12,492	26	5,552	27	8,460	18	3,760	348	105,31

MENT OF THE ARMY ISTING HEATING SYSTEM TOTALS

7-1-E

g Mon	ths	Inte	rmediate B	lithing A	Aonths	S	ummer Bi	ling M	onths	L							_		
On-	Peak	Off	-Peak	On	Peak	Off	Peak	Or	n-Peak		Non-S	ummer			Sun	mer		Annual	\Box
hrs/		hrs/	ī	hrs/		hrs/	1	hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	1
day	kWIVMo	day	kWh/Mo	day	kWh/Mo	day	·kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr	KWH/Yr_	KWH/Yr.	s	\$	No.
- 8	1.792	Ş	3.024	6	1.344	0	0	0	0	60	28.224	12,544	\$3,172	. 0	0	Ü	\$0	\$3,172	282
_ 2	448	3	1,008	2	448	0	0		0	60	9,408	3.584	\$1,349	0	0	C.	\$0	\$1 349	283
0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$ 0	\$0	284
8	2.992	12	6,732	8	2.992	12	6,732	8	2,992	112	53.856	23,936	\$6,027	56	26,928	11,968	\$3.069	\$9 096	296
0	0	0	0	. 0	0	0	_ 0_	0	0	0	0	0	\$0	0	0	6	\$0	\$0	297
0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	298
2	148	3	333	2	148	3	333	2	148	22	2,664	1,184	\$436	11	1,332	592	\$229	\$665	299
2	148	3	333	2	148	3	333	_ 2	148	22	2,664	1,184	\$43 6	11	1,332	592	\$229	\$665	300
2	148	3	333	2	148	3	333	2	148	22	2,664	1,184	\$436	11	1,332	592	\$229	\$6 65	301
2	148	3	333	2	148	3	333	2	148	22	2,664	1,184	\$436	11	1,332	592	\$229	\$665	302
	176	3	396		176	3	396	2	176	26	3 168	1 408	\$ 519	13	1 584	704	\$272	\$791	303
28	6,000	39	12,492	26	5,552	27	8,460	18	3,760	348	105,312	46,208	\$12,813	114	33,840	15,040	\$4,255	\$17,068	

Proposed.

To replace the outdated Central Steam Boiler Plant in Building 2700 with alternative methods for providing energy for heating and reheat where applicable for Buildings 2700, 2704, 2705, 2706 and 2715, domestic hot water for Building 2700, and new support equipment for the cafeteria in Building 2700. The proposed base case for this decentralization is as follows:

Steam Decentralization - Base Case

- Heating
- Building 2700 AHU's and UH's converted to MCA 2-pipe hot water heating system/season.
- Building's 2704 (steam) and 2705 (hot water) converted to new boiler plants located in/near each building. Steam coils and unit heaters to be replaced by hot water equipment in Building 2705.
- Reheat
- Building 2700 cleanrooms to new steam (or hot water, see ECO-1B) boilers on fourth floor (MR-#43).
- Building 2705 reheat on new hot water heating boilers.
- Kitchen Equipment Convert to gas appliances.
- Domestic Hot Water Convert to new gas generator with existing distribution system.

Note: See the proposed electric and the construction cost sections for implementation details about each of these.

Table 5.2.7.4 Summarizes the daily requirements in mlbs/day of steam. These totals when converted (1 to1) to mmBtu/day are listed in the following table. Since the old boiler loads are being replaced by new boilers including the hot water boilers in Building 2706 dedicated to the MCA system, we can lump the totals as shown. Some adjustments to the totals are made for incorporating losses associated with the steam boilers dedicated for Building 2704, and for the cleanroom areas in Building 2700. An additional 10% will be included for losses with heating Building 2704 and 10% is added to the reheat loads for Building 2700. The mmBtu/yr totals were adjusted accordingly. Refer to the following table for

the totals for heating type energies required with the proposed conditions.

Usage	Average mmBtu/day	Adjusted mmBtu/day	Total mmBtu/yr	Adjusted mmBtu/yr
Space Heating	22.3	22.6	8,140	8,240
Reheat	31.9	33.8	11,650	12,320
Domestic Hot Water	5.6	5.6	2,040	2,040
Cafeteria Use	1.6	1.6	600	600
Totals	61.4	63.6	22,430	23,200

Proposed Natural Gas

Usage and Cost. Using the proposed adjusted energy requirements listed above we can now predict the fuel (natural gas) requirements for the new arrangement. As stated before, an efficiency of 80% will be assumed for all gas-fired heating equipment thereby allowing for grouping the different uses and/or boilers. The totals for fuel energy (mmBtu), natural gas (mcf), and fuel cost are summarized below with the total for fuel (natural gas) predicted to be about \$211,000.

Usage	Heating (mmBtu/yr)	Fuel (mmBtu/yr)	Natural Gas (mcf/yr)	Fuel Cost (\$/yr)
Space Heating	8,250	10,310	10,000	\$75,000
Reheat	12,320	15,400	14,940	\$112,050
Domestic Hot Water	2,040	2,550	2,475	\$18,560
Cafeteria Use	600	750	725	\$5,440
Totals	23,210	29,010	28,140	\$211,050

Proposed Electric

Usage and Cost. The proposed electric demand and usage totals for the decentralization of Buildings 2700's central steam plant is determined below. The following assumptions will be established to support equipment for the installation of each piece of replacement equipment.

Proposed Electric Assumptions

- 1) Savings will be recognized from the elimination of the pumps related to the existing Building 2700 central steam plant.
- 2) Added energy costs will be incurred from the increased size in pump horsepower for the MCA system. This increase is from the added load (50%) being placed on the system. The new pumps are estimated to require 30 HP motors in lieu of the existing 15 HP motors.
- 3) Support of Building 2700, Fourth floor cleanroom loads will require (2) 25 HP boilers which will utilize forced draft fans estimated to be about 1.5 HP (each). The boiler feed (condensate return) pumps will require 0.5 HP motors (each).
- 4) The new steam boilers in Building 2704 will require forced draft fans of about 1 HP (each). The boiler feed (condensate return) pumps will require 0.5 HP motors (each). The lighting for the new space is estimated to be about 1.75 watt/ft² or 2600 watts.
- 5) The new hot water boilers in Building 2705 will require forced draft fans of about 1.5 HP (each). New hot water pumps are estimated to require 7.5 HP motors. The lighting for the new space is estimated to be about 1.75 watts/ft² or 2600 watts.
- 6) The electrical energies associated with changes to Building 2700's domestic hot water system, and cafeteria systems are assumed not to change.
- 7) Chemical treatment pumps if required, are not included in the totals.
- 8) The electrical requirements for the MCA boilers fans will go up but the elimination of the existing boiler plant's fan offsets these

Entech Engineering, Inc.

totals. Again these values will not be separated and are considered in the miscellaneous totals.

The annual electric demand and usage totals for the proposed heating system equipment are 452 kW/yr and 220,068 kWh/yr, all at a cost of \$18,157. The summary is shown below.

Season	Demand (kW)	Off-Peak (kWh)	On-Peak (kWh)	Energy (mmBtu)	Cost (\$)
Non-Summer	394	139,680	53,392	659	\$15,861
Summer	58	19,860	7,136	92	\$2,296
Totals	452	159,540	60,528	751	\$18,157

FT. MON BUILDING 2700 ELECTRIC MODE

			HVAC Airside Equipment - General Inform	nation		Cooling Equipment	Total	Winter	Intermed
HVAC	Design/Site	Equip.	Field	Area	1	Field	Connected	Demand	Demand
Item	Designation	Type	Data/Reference/(Location)	Served	<u> </u>	Data/Reference/(Location)	Load (kW)	kW/month	kW/mont
282	HWP-1_	Pump	Allis Charmers - Building 2706	MCA Hot Water	N/A		22 4	16.8	13
283	HWP-2	Pump	Allis Charmers - Building 2706	MCA Hot Water - Lag	N/A		22 4	16 8	13
284	HWP-3	Pump	Allis Charmers - Building 2706	MCA Hot Water - Standby	N/A		22 4	00	0
296	FWP-1	Pump	Aurora - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	0.0	0.0	0
297	FWP-2	Pump	Worthington - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	0.0	0.0	0
298	FWP-3	Pump	ingersol Rand - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	00	00	0
299	CP-1	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	0.0	0.0	0
300	CP-2	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	00	0 0	0
301	CP-7	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	0.0	00	0
302	CP-8	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	0.0	00	0
303	CP-1 (New)	Pump	unknown - Building 2706	Condensate	N/A	(SYSTEM SHUTDOWN)	0.0	0.0	0
320		F.D. Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		1.1	08	0
321		F.D. Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		1.1	8.0	0
322		Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		8.0	06	0
323	·	Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		0.8	06	0
324	•	F.D. Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads	N/A		0.8	06	0
325		F.D. Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	06	0
326		Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	0.6	0
327		Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads	N/A		0.8	06	0
328		Pump	Proposed Building 2704 Boiler Plant		N/A		2.6	20	2
329		F.D. Fan	Proposed Building 2705 Boiler Plant	Building 2705 Heat/Reheat	N/A		1.1	0.8	0
330		F.D. Fan	Proposed Building 2705 Boiler Plant		N/A		1.1	0.8	c
331		Pump	Proposed Building 2705 Boiler Plant		N/A		5.6	4.2	4
332		Pump	Proposed Building 2705 Boiler Plant	Building 2705 Heat/Reheat	N/A		5.6	4.2	4
333		Lighting	Proposed Building 2705 Boiler Plant	Building 2704 Lighting	N/A		26	2.0	?
				TOTALS			93	53	4

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - PROPOSED DECENTRALIZED HEATING SYSTEM TOTALS

TABLE ECO-1-P

						W	ınter Billi	ng Mon	ths	inten	nediate E	Billing N	onths	S	ummer B	illing M	onths	1		
	Cooling Equipment	Total	Winter	Intermed.	Summer	Off-	Peak	On-	Peak	Off-	Pesk	On-	Peak	Off-	Peak	Or	-Peak	 	Non-Si	ummer
	Field	Connected	Demand	Demand	Demand	hrs/	- 1	hrs/		hrs/		hrs/		hrs/	·	hrs/		Demand	Off-Peak	On-Peak
	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day ·	kWh/Mo	day	kWh/Mo	day	kWh/Mo	dav	kWh/Mo	dav	kWh/Mo	KW/Yr.	KWH/Yr.	KWH/Yr.
	N/A	22 4	16 8	13 4	0.0	12 0	8.064	8	3,584	9	6,048	6	2.688	0	0	0	0	121	56 448	25.088
	N/A	22 4	16 8	13 4	0.0	8.0	5,376	4	1,792	6	4,032	3	1,344	0	0	0	0		37,632	12.544
dby	N/A	22 4	00	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0		0	0	0
	N/A (SYSTEM SHUTDOWN)	0.0	0.0	00	0.0	0.0	0	0	0	0	0	0	0.	0	0	ŏ		0	0	0
	N/A (SYSTEM SHUTDOWN)	0.0	0.0	00	0.0	0.0	0	0	0	0	0	0	0	ō		ŏ	- 0	0	0	<u>o</u> .
	N/A (SYSTEM SHUTDOWN)	0.0	00	00	0.0	0.0	0	0	0	0	ō	0	0	Ô	0	0		0	0	
	N/A (SYSTEM SHUTDOWN)	0.0	00	0.0	0.0	00	0	0	0	0	0	0	0	0	0	0	- 0	0	0	0
	N/A (SYSTEM SHUTDOWN)	0.0	0.0	00	0.0	0.0	0	0	0	0	0	0	0	0		0	<u>-</u>	0	0	
	N/A (SYSTEM SHUTDOWN)	0.0	00	0.0	0.0	0.0	0	0	0	0	0	0	0	0		Ô	0	0	0	0
	N/A (SYSTEM SHUTDOWN)	0.0	00	00	0.0	00	0.	0	0	0	0	0	0	0		0	0		0	0
	N/A (SYSTEM SHUTDOWN)	0 0	0 0	00	0.0	0 0	0	0	0	0	0	0	0	- 0		<u>_</u>	0		0	
oms	N/A	1 1	0 B	0.8	0.0	12 0	396	В	176	12	396	8	176	12	396	A.	176	7	3,168	1,408
oms	N/A	1.1	0 B	0.8	0.0	30	99	0	0	3	99	0	0	0	0	ŏ	0	7	792	0
oms	N/A	0.8	06	0.6	0.6	12 0	270	8	120	12	270	В	120	12	270	8	120	5	2.160	960
oms_	N/A	0.8	0 6	0.6	0.6	30	68	0	0	3	68	0	0	3	68	<u>, o</u>	0	5	540	0
Loads	N/A	0.8	0.6	0.6	0.0	12 0	288	8	128	8	192	4	64	0		0	0	5	1.920	768
Loads	N/A	0.8	0 6	0.6	0.0	3 0	72	0	0	3	72	0	Ö	0	0	<u>ŏ</u> .	0	5	576	0
Loads	N/A	0.8	06	0.6	0.6	12 0	270	8	120	8	180	4	60	0	0	0	0	5	1 800	720
Loads	N/A	0.8	0 6	0.6	0.6	3.0	68	0	0	3	68	0	0	3	68	<u>,</u>	0	5	540	0
	N/A	2.6	20	2.0	2 0	80	624	4	208	8	624	4	208	8	624	4	208	16	4.992	1.664
neat	N/A	1.1	0.8	8 0	0.0	12 0	396	8	176	12	396	8	176	12	396	8	176	7	3,168	1.408
neat	N/A	11	0.8	0.8	0.0	30	99	0	0	3	99	0	0	0	0	0	0	7	792	0
neat	N/A	5 6	4 2	4 2	4.2	12 0	2,016	8	896	12	2,016	8	896	12.	2.016	8	896	34	16.128	7,168
neat	N/A	5.6	4.2	4.2	4.2	30	504	0	0	3	504	ő	0	3	504	ŏ	0	34	4.032	
	N/A	26	20	20	2 0	8.0	624	4	208	8	624	4	208	8	624	<u></u>	208	16	4 992	1.664
TALA		93	53	46	15	126	19,233	68	7,408	113	15,687	57	5,940	73	4.965	40	1,784	394	139,680	53.392

OF THE ARMY TRALIZED HEATING SYSTEM TOTALS

	Inter	mediate E	illing N	Months		Summer Bi	lling Mo	nths	l				_					
_	Off-	Peak	On	Peak	Off	-Peak	Or	-Peak			ummer			Sum	mer		Annuai	
_	hrs/	i	hrs/		hrs/		hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	
Mo	day	kWh/Mo	day	kWN/Mo	day	kWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$\$	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	S	No.
584	9	6.048	- 6	2.688	0	0	0	0	121	56.448	25,088	\$6,345	0	0	0	\$0	\$6,345	282
792	6	4,032	3	1,344		0	0	0	121	37 ,632	12,544	\$4,262	lo	0	0	\$0	\$4.262	283
_0	0	0	0	0		0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	284
_0	0	0	0	0	0	0	0	0	0	. 0	0	\$0	0	0	0	\$0	\$0	296
0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	297
_0	0	. 0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	298
_0[0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	. 0	\$0	\$o	299
_0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0.	\$0	\$0	300
_0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	301
_0	. 0	0	_ 0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	302
_01	0	0	0	0	0	0	0	0	0	0	_0_	\$ 0	0	0	0,	\$0	so	303
176	12	396	. 8	176	12	396	8	176	7	3,168	1,408	\$35 5	0	1,584	704	\$150	\$505	320
_0[3	99	0	0	0		0	0	7.	792	0	\$104	0	0	0	\$0	\$104	321
120	12 .	270	. 8	120	12		8	120	5	2,160	960	\$242	2	1.080	480	\$123	\$365	322
0	3	68	0	0	3		0	0	5	540	0	\$71	2	270	0	\$38	\$109	323
128	8.	192	4	64	0		0	0	5	1,920	768	\$215	0	0	0	\$0	\$215	324
_0	3.	72	0		0		0	0	5	576	0	\$76	0	0	0	\$0	\$76	325
20	8	180	4	60	0		0	0	5	1,800	720	\$202	2,	0	0	\$21	\$223	326
0	3	68	0		3		0	0	5	540	0	\$71	2	270	0	\$38	\$109	327
,08	8	624	4	208		624	4.	208	16	4.992	1,664	\$562	8	2,496	832	\$288	\$850	328
76	12	396	8	176	12	396	8	176	7	3,168	1,408	\$355	0	1,584	704	\$150	\$505	329
0	3	99	0	0	0	0	0	0	7	792	0	\$104	0	0	0	\$0	\$104	330
-96[12	2.016	8	896	12	2,016	<u>8</u>	896	34	16,128	7,168	\$1,805	17.	8.064	3,584	\$919	\$2,724	331
.0]	3	504	0		3	504	0	0	34	4.032		\$ 531	17	2.016	0	\$281	\$812	332
08	8.	624	4	208	8	624	4	208	_16	4,992	1,664	\$56?	<u> </u>	2,496	832	\$288	\$8 50	333
:08	113	15,687	57	5,940	73	4,965	40	1,784	394	139,680	53,3 92	\$15,861	58	19,8 60	7,136	\$2,296	\$18,157	$\neg \neg$

Proposed Operating and Maintenance

Cost.

The proposed yearly operating and maintenance costs for the decentralized boiler plant are estimated. Estimates for Building 2706 have been raised because the proposed load on this system has been increased by 50% causing speculation for more attention and costs.

1) Building 2706 (MCA Hot Water)	Daily Monitoring Equipment Maintenance	\$50,000/yr \$70,000/yr
2) Building 2700 (Cleanrooms)	Daily Monitoring Equipment Maintenance	\$30,000/yr \$30,000/yr
3) Building 2704 (Steam)	Daily Monitoring Equipment Maintenance	\$30,000/yr \$30,000/yr
4) Building 2705 (Hot Water)	Daily Monitoring Equipment Maintenance	\$30,000/yr \$30,000/yr
Totals	Daily Monitoring Equipment Maintenance	\$140,000/yr \$160,000/yr

The proposed one year cost for firing, operating and maintaining the decentralized boiler plant is estimated to be near \$538,000.

Energy Cost	\$238,000
Operation/Maintenance	\$300,000
Total	\$538,000

Construction Cost.

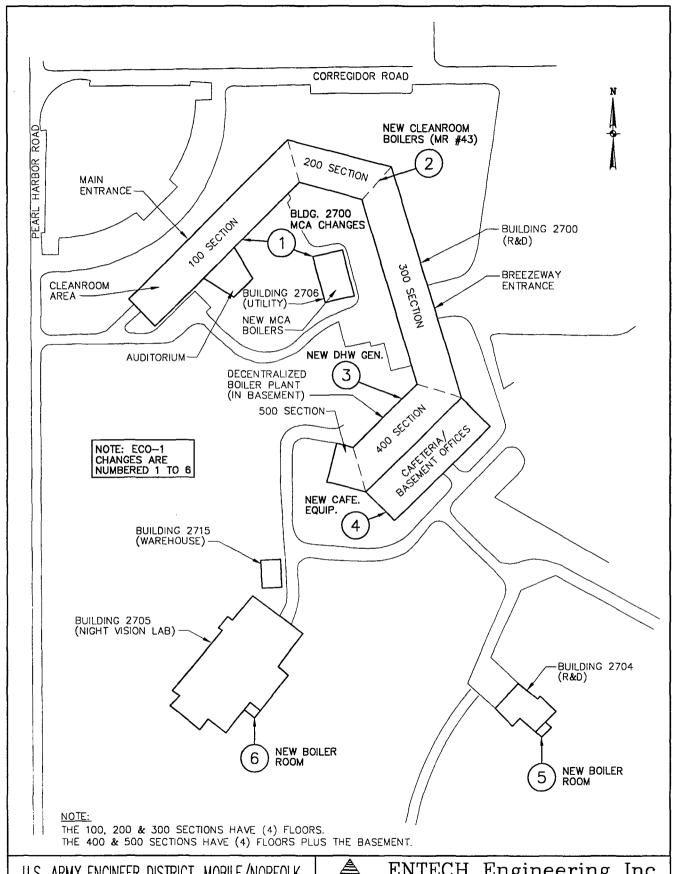
The construction costs for decentralizing the Building 2700 boiler plant system is estimated to be about \$1,340,000.

There are six (6) major changes required to accomplish the decentralization. The description and estimated costs for the six changes to the systems are listed below and discussed further in detail in this section.

- 1) Building 2700 steam air handling coils and unit heaters switched to MCA hot water. The existing hot water pumps would also be replaced with this option.
- 2) Building 2700 cleanroom loads dedicated to new steam (or hot water ECO-1B) boilers located in Machine Room #43 on the fourth floor.
- 3) Building 2700 domestic hot water loads dedicated to a new hot water generator in the old boiler room in the basement.
- 4) Building 2700 cafeteria steam loads converted to new gas-fired equipment.
- 5) Building 2704 heating loads dedicated to new steam boilers housed in a new building structure located near the existing mechanical room that contains the supply and return piping to the system.
- 6) Buildings 2705 and 2715 heating loads and Building 2705 reheat loads dedicated to new hot water boilers housed in a new building structure located near the existing mechanical room that contains the supply and return piping to the systems.

Note: Details and costs associated with the demolition, cleanup, and any possible renovations to the existing boiler plant space, after the decentralization is complete, are not speculated in this report. Provisions for heating this space, if required, are not detailed but some costs have been included by raising the contigency totals by 3%. The impact to the ECO for providing heat to this area is considered minor.

Each change is described on the following pages and included are the cost estimates for each. Figure ECO-1 is a markup of the site plant from section locating the changes described. At the end of this section is an estimate that summarizes all six changes.



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1851 WEST END AVE P.O. BOX 389 POTTSVILLE, PA 17901 (717) 628-5655 U.S. ARMY ENGINEER DISTRICT, MOBILE/NORFOLK FORT MONMOUTH **NEW JERSEY** DATE DRAWN BY PROJ. MGR. APPROVED CHECKED BY 12/28/95 RJI JED ELC LIMITED ENERGY STUDY, EEAP PROGRAM SCALE PROJECT NO. DRAWING NO. REVISION MYER CENTER, BLDG. 2700 - SITE PLAN 1" = 200 4130.05 FIG. ECO-1

1. Building 2700 - Steam Air Handling Coils and Unit Heaters to MCA-HW.

With the exception of the one cleanroom on the second floor and the three on the fourth floor all the remaining steam supplied heating devices in Building 2700 will be replaced by MCA Hot Water Coils/Equipment operating on a seven month schedule. The steam coils in the (19) air handlers will be replaced by hot water coils and the (21) steam unit heaters will be replaced by hot water unit heaters. The two types total up to about 400 gallons per minute of additional connected load for the MCA system. The existing connected load is about 650 gpm bringing the proposed total to about 1,050 gpm. Presently the MCA system with its two (2) 8,400 mmBtu/hr hot water boilers in Building 2706 has two (2) of three (3) pumps operating at 455 gpm each. With the proposed MCA load additions, these three (3) pumps are recommended for changeout to larger pumps estimated to be about 550-600 gpm in capacity.

The 2-pipe MCA water distribution system was sized for chilled water and therefore it is not a problem (in general) to add flow to the system piping. Controls and individual feed details would have to be resolved during the design phase.

Refer to the following two tables ECO-1AHU and ECO-1UH which document the individual units and their demands. The coil piping size is also shown in these tables. Those sizes range from 3/4" to 2" for the air handler coils and 3/4" to 1-1/4" for the unit heaters.

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 AHU SWITCHOVER FROM STEAM TO MCA HOT WATER COILS

TABLE EC0-1AHU

			HVAC Airside Equipment - General Information	nation	Est	Est. Airside/Fan Data (Evap. Fan)	an Data (E	vap. Fan)		Est. Heating Load	ngLoad	Heating	Heating Type (Est. Flows/KW)	ows/KW)	Coll
HVAC	Design/Site	Equip.	Field	Area	Flowrate	Ą	TSP.	Supp.Fan	RAOA	Heating	Re-Heat	Steam	MCA-HW	Electric	Line Size
Hem	Designation	Type	Data/Reference/(Location)	Served	(ctm)	(ctm)	In w.g.)	(hp)	(hp)	(MBH)	(MBH)	(Ib/hr)	(mdb)	(Kw)	(inches)
		AHO	McQuay LML(OA418 - JCALS)	Cafeteria	21,300	2,130	e	20		492	0	A/N	49	N/A	5
4		AHC	unknown(OA400)	OA400 (J-CALS)	21,300	2,130	က	20		492	0	ΥX	49	A/N	5
26		PH2	unknown(1B115)	1B115 office/storage	3600	240	6	9		40	ō	Ϋ́N	4.0		3/4
76		물	Comfort Air(1B138)	1B138 Offices	3,810	572	2	2		42	0	Ϋ́Z	4.2	A/N	3/4"
35	AC-1(New)	AHC.	Dunham Bush(1B142)	18142	8,700	1,305	2.6	7.5		96	0	₹N	10	₹/Z	1 1/4"
36		AHC	Chrysler 1005(1B141A)	1B141A	1,905	286	7	-		21	0	ΥX	2.1	A/N	3/4"
47		AHO	Carrier 50(1B202 - Photography)	1B202	1,905	286	2	-		21	0	A/A	2.1	//N	
48			Trane SAHB(18205 - EMS Room)	1B205	2,286	343	2	-		25	0	N/A	2.5	ž	
50		AHO	Chrysler 1005(1B212)	18212	1,905	286	2	-		21	0	ΥN	2.1	A/A	3/4"
88			McQuay LSL(Auditorium M-Area)	Auditorium	7,700	1,540	6	7.5		110	0	X	7	N/A	_
06		PHC.	McQuay LSL(Auditorium M-Area)	Auditorium	7,700	1,540	က	7.5		110	0	Ϋ́Z	=	ž	1 1/4"
9	AC-1		unknown(MR - 1aB138/Mezz.)	1aB138 Mezz, Area	8,165	1,650	2	5		132	0	A/N	13	A/A	ı.
96	AC-2		unknown(MR - 21 South 2C/D100 Area)	2D110 offices	11,800	800	-	5		128	0	Y/N		4X	Ľ
97	AC-3	AHC	unknown(MR - 22 North 2C/D100 Area)	2D130 electronics lab	10,200	2,100	2	5		509	0	V/N	21	A/N	٦
106	AC-14	뫈	unknown(MR - 23 East 2C/D200 Area)	2D306 lab area	16,520	2,250	2	7.5		393	0	₹Ż	39	N/N	2
131		(2)AHU	York(MR - 33 East 3C/D200 Area)	3D306-3C321 lab area	32,000	3,200	6	30		458	0	A/N	46	N/A	5
135		Æ	Climatrol(MR-34 South 3C/D300 Area)	3D330 Cleanroom	25,000	2,000	က	20		358	0	ΥZ	36	N/A	2
152	AC-7	AHU	unknown(MR - 41 South 4C/D100 Area)	4D110 lab/offices	16,300	2,000	3	10		264	0	N/A	26	N/A	11/2"
				Basement, First, Second, Third and	202,096	27,957	N/A	154	0	3,411	0	0	341		
				רסעונה רוססו\$	_										

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 UH SWITCHOVER FROM STEAM TO MCA HOT WATER UNIT HEATERS

TABLE EC0-1UH

			HVAC Airside Equipment - General Information	ation	Est	Est. Airside/Fan Data (Evap. Fan	Data (Evap	. Fan)	Ē	Est. Heating Load	oad	Heating T	Heating Type (Est. Flows/KW)	ws/KW)	Coil
HVAC	Design/Site	Equip.	Field	Area	Flowrate	V YO	TSP Sup	Supp.Fan RA/OA	H	Heating Re	Re-Heat	Steam	мса-нш	Electric	Line Size
ttem	Designation	Type	Data/Reference/(Location)	Served	(ctm)	(cfm) (in	W.g.)	(hp) (hp)	_	MBH) (N	(MBH)	(Ip/hr)	(шдв)	(Kw)	(inches)
15		꿈	unknown(OA501-storage)	OA501	320	0	0.5	0.04	L	20	0	N/A	2.0	A/N	3/4"
16		£	unknown(OA503-storage)	OA503	320	0	0.5	0.04		20	0	ΥZ	2.0	ΑN	3/4"
1		3	unknown(OA321-hallway)	OA321	320	0	0.5	0.04		20	0	₹2	2.0	₹2	3/4"
2		ž	unknown(OA326-Substations #2 & 6)	OA326	320	0	0.5	0.04		20	0	Ϋ́	2.0	ζ/Z	3/4"
19		5	unknown(OA328-Substations #2 & 6)	OA328	320	0	0.5	0.04		20	0	ΥN	2.0	Α/N	3/4"
37		₹	unknown(Stairway #1)	Stairway #1	250	0	0.5	0.04		15	0	Ϋ́Z	1.5	ďΖ	3/4"
38		3	unknown(18107 - storage)	18107	640	0	0.5	0.1		40	0	ΝA	4.0	₹/X	374"
39	•	ᇹ	unknown(18109 - storage)	1B109	640	0	0.5	0.1		40	0	N/A	4.0	ΑV	3/4"
9	-	풀	unknown(1B111- storage)	18111	640	0	0.5	0.1		40	0	ΥN	0.4	ΥŻ	3/4"
7		₹	unknown (18109 - storage)	18107	250	0	0.5	0.04		15	0	A/N	1,5	VΛ	3/4"
42		ij	unknown (18110 - shop)	18110	200	0	0.5	0.1		30	0	N/A	3.0	ΝΑ	3/4"
43		£	unknown(Stairway #3)	Stairway #3	250	0	0.5	0.04		15	0	N/A	1.5	N/A	3/4"
5		š	unknown (18212 - shop)	18212	200	o	0.5	0.1		30	0	Z/A	3.0	A/A	3/4"
9		£	unknown(Stairway #4)	Stairway #4	200	0	9.0	0.03		10	0	N/A	1.0	Ž	3/4"
6		ᇹ	unknown(18307))	18307	1,000	0	0.5	0.15		99	0	A/N	9.9	Α/N	
62	2 UH-21	품		haliway	320	0	0.5	0.05		20	0	ΥN	2.0	A/A	3/4"
63	•	咅	unknown(1B321 Receiving)	18321	1,300	0	6.5	0.20		84	0	ΝΑ	8.4	N/A	1 1/4"
9		ᇹ	unknown(1B321 Receiving)	18321	1,300	0	0.5	0.20	_	84	0	ΑN	8.4	₹/N	1 1/4"
99	0H-23	3	unknown(Stairway #6)	Stairway #6	200	0	0.5	0.03		10	0	ΝΑ	1.0	ΑVA	3/4"
62		ឣ	unknown(Stairway #7)	Stairway #7	320	٥	0.5	0.05		15	0	₹Ž	1.5	¥χ	3/4"
80		3	unknown(Stairway #11)	Stairway #11	200	0	0.5	0.03		10	0	N/A	1.0	N/A	3/4"
				Basement and First Floors	9,150	0	N/A	-	o	564	0	0	62	0	
					_		7	-		,	4		1	1	

To determine cost estimates for these steam to MCA hot water changeouts, we must first develop costs for each coil/unit heater replacement. Unit costs for material and labor were developed for each size based on Means Estimating Methods and they are tabled below. An estimated 200 linear feet of piping has been assumed for each new MCA HW user.

Pipe	Contro	l Valve	Balancir	ıg Valve	Y-St	rainer	Misc.	Valves	Pip	ing	Total	Cost
Size	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor	Mat'l	Labor
3/4"	600	50	40	10	10	15	60	75	800	800	\$1,510	\$950
1"	700	60	50	15	15	15	95	90	1,000	800	\$1,860	\$980
1-1/4"	850	70	60	20	20	20	150	120	1,200	1,000	\$2,280	\$1,230
1-1/2"	900	100	70	25	30	25	180	150	1,400	1,200	\$2,580	\$1,500
2"	1,000	120	100	50	40	30	250	200	1,600	1,600	\$2,990	\$2,000

From these unit costs we can proceed in determining the estimated costs for material and labor for each unit being reworked. The total costs for the AHU coils is approximately \$60,000 for material and \$54,400 for labor. As for replacing the unit heaters the costs are estimated to be \$43,000 and \$32,000 respectively for material and labor. These estimates are summarized in Tables ECO-1AHU-C and ECO-1UH-C.

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 AHU SWITCHOVER FROM STEAM TO MCA HOT WATER COILS - COST ESTIMATE

TABLE EC0-1AHU-C

Cotal	osts	Labor	\$4,250	\$4,250	\$2,100	\$2,100	\$2.830	\$2.100	\$2,100	\$2.100	\$2,100	\$2.830	\$2,830	\$2.830	\$2,830	\$3,200	\$4.250		\$4,250	\$4,250	\$4,250 \$4,250
AHU Unit Total	Rework Costs	Material	\$4,700	\$4,700	\$2,010	\$2.010	\$3,280	\$2.010	\$2,010	\$2.010	\$2,010	\$3.280	\$3,280	\$3,280	\$3.280	\$3,780	\$4.700		\$4,700	\$4,700	\$4,700
ter Coil	Costs	Labor	\$2,000	\$2,000	\$950	\$950	\$1,230	\$950	\$950		\$950	in			\$1,230	\$1,500	\$2,000	2000	2000	\$2,000	\$2,000
Hot Water Coi	Piping Costs	Material	\$3,000	\$3,000	\$1,510	\$1,510			\$1,510	\$1,510	\$1,510	\$2,280	\$2,280	\$2,280	\$2,280	\$2,580	\$3,000	\$3.000		\$3,000	\$3,000
AHU Unit	ter Coll	Labor	\$750	\$750	\$150	\$150	\$400	\$150	\$150	\$150	\$150	\$400	\$400	\$400	\$400	\$500	\$750	\$750		\$750	\$750
AHD	Hot Water Coll	Material	\$1,500	\$1,500	\$300	\$300	\$800	\$300	\$300	\$300	\$300	\$800	\$800	\$800	\$800	\$1,000	\$1,500	\$1,500	4. 000	000,13	\$1,500
Chit	il Demo.	Labor	\$1,500	\$1,500	\$1,000	\$1,000	\$1,200	\$1,000	\$1,000	\$1,000	\$1,000	\$1,200	\$1,200	\$1,200	\$1,200	\$1,200	\$1,500	\$1,500	94 500	000	\$1,200
AHD Unit	Steam Coil Demo.	Material	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	6200	202	\$200
200	Line Size	(Inches)	2	2	3/4"	3/4"	11/4"	3/4"	3/4"	3/4"	3/4"	11/4"	1 1/4"	1 1/4"	1 1/4"	1 1/2"	2	2			1 1/2"
Demand	MCA-HW	(mdB)	49	49	4	4	10	2	2	6	2	=	11	13	13	21	39	46	36		56
nformation	Area	Served	Cafeteria	OA400 (J-CALS)	1B115 office/storage	1B138 Offices	18142	1B141A	18202	18205	18212	Auditorium	Auditorium	1aB138 Mezz. Area	2D110 offices	2D130 electronics lab	2D306 lab area	3D306-3C321 lab area	3D330 Cleanroom		4D110 lab/offices
HVAC Airside Equipment - General Information	_	e Data/Reference/(Location)	J McQuay LML(OA418 - JCALS)	٦		J Comfort Air(1B138)			Camer 50(1B202 - Photo	J Trane SAHB(1B205 - EMS Room)	J Chrysler 1005(1B212)	J McQuay LSL (Auditorium M-Area)	J McQuay LSL(Auditorium M-Area)	Junknown(MR - 1aB138/Mezz.)	unknown(MR - 21 South	3		York(MR - 33 East 3C/D	U Climatrol(MR-34 South 3C/D300 Area)		unknown(MR - 41 South
	te Equip	4	H	¥	₽¥.	₽¥	AHO	ΨĘ	AF.	AHC	AH.	A.	¥.	AE.	₽	₽	Ą	(2)AHD	₹		AHU
	Design/Site	Designation	٠		•		AC-1(New							¥ċ-	AC-2	AC-3	AC-14				AC-7
	HVAC	Rea	•	4	56	34	35	36	47	84	20	89	90	2	76	97	106	131	135		152

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 UH SWITCHOVER FROM STEAM TO MCA HOT WATER UNIT HEATERS - COST ESTIMATE

TABLE EC0-1UH - C

			HVAC Airside Equipment - General Information	nformation	Demand	S	Steam Unit Heater	Heater	HW Unit Heater	eater	HW Unit Heater	Heater	Unit Heater Total	r Total
HVAC	Design/Site	Equip.	Field	Area	MCA-HW	Line Size	Demolition Costs	Costs.	Installation Costs	Costs	Piping Costs	Costs	Rework Costs	Costs
ftem	Designation	Type	Data/Reference/(Location)	Served	(mdb)	(inches)	Material	Labor	Material	Labor	Material	Labor	Material	Labor
15	,	3	unknown(OA501-storage)	OA501	2	3/4"	\$20	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
16		풀	unknown(OA503-storage)	OA503	2	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
17		3	unknown(OA321-hallway)	OA321	2	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
18		5	unknown(OA326-Substations #2 & 6)	OA326	2	3/4"	\$20	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
19		3	unknown(OA328-Substations #2 & 6)	OA328	2	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
37		3	unknown(Stairway #1)	Stairway #1	1.5	3/4"	09\$	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
38	•	5	unknown(1B107 - storage)	18107	7	3/4"	09\$	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
38		5		1B109	4	3/4"	\$20	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
9		3	unknown(1B111- storage)	18111	4	3/4"	\$20	\$500	\$200	\$300	\$1,510	\$950	\$2.260	\$1.750
Ş	•	3	unknown (1B109 - storage)	18107	1.5	3/4"	\$20	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
42		3	unknown (18110 - shop)	1B110	3	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
2	•	3		Stairway #3	1.5	3/4"	09\$	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
2	•	5	unknown (1B212 - shop)	18212	3	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
09	•	3	unknown(Stairway #4)	Stairway #4	-	3/4"	09\$	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
2	1	5		1B307	9.9	1.	09\$	\$500	\$800	\$300	\$1,860	\$980	\$2,710	\$1,780
62	CH-21	5	unknown(hallway near 18322)	hallway	2	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
63		5	unknown(1B321 Receiving)	18321	8.4	1 1/4"	\$20	\$500	\$1,000	\$400	\$2,280	\$1,230	\$3,330	\$2,130
3		5	unknown(1B321 Receiving)	1B321	8.4	11/4"	\$20	\$500	\$1,000	\$400	\$2,280	\$1,230	\$3,330	\$2,130
99	OH-23	5	unknown(Stairway #6)	Stairway #6	-	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1,750
79		3	unknown(Stairway #7)	Stairway #7	1.5	3/4"	09\$	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
နှင့် မြ		3	unknown(Stairway #11)	Stairway #11	1	3/4"	\$50	\$500	\$700	\$300	\$1,510	\$950	\$2,260	\$1.750
				Basement and First Floors	62		006\$	000'6\$	\$13,300	\$5,600	\$29,070	\$17,690	\$43,270	\$32,290

The cost estimate including factors for Material (10%) and Labor (55%), Overhead and Profit, Contingency (10%) and the Life Cycle Analyses for SIOH (5.5%), and the Design Fee (6%) can now be completed for the first of six (6) changes for Building 2700 Boiler Plan Decentralization. From the cost estimate attached we can see that the construction cost estimate to change the steam coils and unit heaters in Building 2700 to MCA hot water is approximately \$417,000. Note, the contingency for this option was increased from 15% to 18% to accommodate the installation of unit heaters in the existing boiler plant area. The energy used by these is considered to be minor and therefore not included in the analysis.

Entech Engineering, Inc.

| * | STADINGS | | See Table ECO-1AHU-C | | | | _ | _ | | | |
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| ATERS TO MCA HIV | TOTAL | COST | \$113,900 | \$75,600 | \$15,000 | 000'6\$ | \$8,000 | \$1,500 | \$6,000 | \$11,000 | \$0 | \$0
 | \$0 | \$0 | 0\$ | 0\$ | 0\$
 | 80 | 0\$ | \$0 | \$0 | \$0
 | \$0 | 0\$ | \$0 | \$0 | \$0 | \$0
 | \$0 | \$240,000 | \$76,900 | |
 | 000,754 | 243,000 | 000,1F¢¢ |
| COILS & UNIT HE | ace | ဗ | \$54,400 | | | | | | | | 0\$ | 0\$
 | \$ | O\$ | 9€ | 0\$ | 0\$
 | S | 0\$ | 90 | 9 | 0\$
 | 0\$ | ⊗ | \$0 | \$0 | 0\$ | 0\$
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| 1) - STEAM AHU | 41 | \$/UNIT | | L | | | | | | | |
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| ON (ECO-1 - CH # | ERIAL | 8 | \$59,500 | 97 | | | \$3,000 | \$500 | 000'£\$ | \$1,000 | 0\$ | \$0
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| DECENTRALIZAT | WAT | #NU/\$ | \$59,500.00 | \$43,300.00 | \$3,000.00 | \$1,000.00 | \$3,000.00 | \$500.00 | \$3,000.00 | \$1,000.00 | |
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 | | | |
| | DESCRIPTION | | 1 Replace AHU Steam Coils w/MCA HW Coils | 2 Replace Steam Unit Heaters w/MCA UH's | 3 Replace (3) Existing MCA HW Pumps | 4 Electrical wiring, connections, etc. for Pumps | 5 Kework Piping Around Pumps | 6 Control Adjustments, etc. | 7 Misc. Reworking of Distribution Pipng | 8 System Balancing | 6 | 0
 | | 7 | | 4 | 9
 | 9 | 7 | 8 | 6 | 0
 | | 7, | | | |
 | | SUBIOIAL | - 11 |] | CONTINGENCY (18 %)
 | SIOH(5.5%) & DESIGN FEE(6%) | BASE TOTAL COST | |
| | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW TOTA ATT HATERIAL ATT HATERIAL | DESCRIPTION | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW | DESCRIPTION QTY UNIT MATERIAL STEAM AHU COILS & UNIT HEATERS TO MCA HW | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW Description QTY | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW | DESCRIPTION QTY UNIT MATERIAL LOST \$50,000 | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW COILS & UNIT HEATERS TO MCA HW COILS & UNIT HEATERS TO MCA HW COILS & UNIT HEATERS TO MCA HW COILS & UNIT HEATERS TO MCA HW COILS & UNIT HEATERS TO MCA HW COILS & UNIT COST \$100 TO \$59,500 TO \$59,500 TO \$59,500 TO \$50,000 TO \$13,000 TO \$10,000 TO \$1 | DESCRIPTION QTY UNIT MATERIAL LOST SFUNIT COST SFUNIT COST SFUNIT COST DESCRIPTION QTY UNIT MATERIAL LOST \$UNIT COST \$UNIT COST \$UNIT COST C | DESCRIPTION QTY UNIT MATERIAL LOST \$4.000 \$54.400 \$54.400 \$113.900 \$113.900 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 \$15.0000 | Description QTY UNIT MATerial Lot \$59,500 00 \$50,000 | Packed Holes and Packed Holes and Packed Holes and Hol | DESCRIPTION QTY UNIT MATERIAL LABOR BARE LOST SCHAM AHU COILS & UNIT HEATERS TO MCA HW | PESCRIPTION QTY UNIT MATERIAL LABOR BARE LABOR | PESCRIPTION QTY UNIT MATERIAL LOST \$50,500 \$50,400 \$51,300 \$11,300 | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW Description QTY UNIT MATERIAL LABOR STA 400 00 STA 400 STA | PESCRIPTION QTY UNIT MATERIAL LOST \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Coils} \text{UNIT COST \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Coils} \text{Lot \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Coils Tot \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10}} \text{Control AHV Pumps \$\frac{\pi_{10}}{\pi_{10} | Percentage Per | Pull Dies CRIPTION COTT LABOR BARENAL LABOR BARENAL LABOR BARENAL LABOR SEG-ATOD SEG-ATO | Pull Dies Cription Cot C | PESCRIPTION QTY UNIT MATERIAL LABOR BARE Foot September Sept | Replace AHU Steam Coils w/MCA HW Coils Lot \$1000 00 \$1000 00 \$1000 | Replace AHU Steam Coils w/MCA HW Coils Coil | Replace AHU Steam Coils w/MCA HW Coils Lot \$595,000 \$500 | Replace AHU Steam Coils w/M/CA HW Coils Lot \$50,000 to \$50,000 | Replace AltJU Steam Coils w/MICA HIV Coils & UNIT WATERIAL COST | Replace AHU Steam Coils w/MCA HW Coils Autralian MATERIAL COST SSG 500 SSG | Replace AHU Steam Coils w/MCA HW Coils Cort CH #1) - STEAM AHU COILS & UNIT HEATERS TO MCA HW Replace AHU Steam Coils w/MCA HW Coils Lici \$53,000 \$53,000 \$50,000 \$51, | Replace AHU Starm Colls w/MCA HW/ Colls 1 Lot \$50,500 to \$50,5 | Replace AHU Steam Coils wMCA HW Coils 1 Lot 550,000 550,00 | Buildoing 2700 DECENTRALIZATION (ECG-1 - CH ft) - STEAM AHU COLLS & UNIT HEATERS TO MCA HAVE RALL Lici \$55,500.00 \$55,000.00 | Page 2 | BUILDING 2700 DECENTRALIZATION (ECO.1 - CH #1) - STEAM AHU COILS & LINIT HEATERS TO MCA HW Perplace AHU Sieren Coils windCA HW Coils 1 Lot \$55,000 \$57,000 | BUILDING 2700 DECENTRALIZATION (ECO.1 - CH #1) - STEAM AHU COILS & LINIT HEATERS TO MCA HW Believe 3 Believe |

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2. Building 2700 - Cleanroom Loads Converted to New Steam
Boilers on the Fourth Floor (for Hot Water Boilers see ECO-1B)

Three (3) cleanrooms on the fourth floor and one (1) small cleanroom on the second floor require reheat year round. Presently these areas are supported by the building steam distribution system which is being considered for abandonment through this decentralization ECO. Since the MCA hot water system is only available for about seven months out of the year, another source is required.

In place of the existing steam system to these cleanroom units, Entech proposes that Machine Room #43 be converted into a boiler room. Fire rated doors, and dampers for air shaft connections, shall be required to make this room acceptable for steam production. Some demolition will also be needed to clear the room for the boilers, etc. Per the appropriate military guidelines, the individual sizing of the two boilers is 780 lb/hr or 25 HP which is 65% of the overall peak requirement of about 1,200 lbs/hr of steam. The installation will require not only the two boilers and the above mentioned room changes but also support equipment including condensate receiver/pump set, chemical treatment, electrical work, and the piping from Machine Room #43 to the applicable cleanrooms.

The total cost for converting the Building 2700 cleanroom loads to a dedicated steam boiler system is estimated to be about \$289,000.

| N BOILERS (MR #43) | | | \$8,000 | \$5,000 | \$3,000 | | = | _
 | \$2,500 | | _ | |
 | = | \$10,000 | | | \$10,000 | \$3,500
 | \$10,000 | 0\$ | 0\$ | 0\$ | 0\$ | 0\$
 | \$0 | 0\$ | 0\$ | 0\$
 | \$173,700 | \$51,200 | | | \$33,800 | \$30,000
 | \$289,000 |
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| ADS TO NEW STEAM | | COST | \$5,000 | \$1,000 | \$2,000 | \$2,000 | \$14,000 | \$1,000
 | \$1,000 | \$6,000 | \$11,000 | \$8,000 | \$4,000
 | \$3,500 | \$2,000 | \$1,600 | \$3,500 | \$5,000 | \$200
 | \$4,000 | \$0 | \$0 | 0\$ | 0\$ | \$0
 | \$0 | 0\$ | 0\$ | \$0
 | | \$41,300 | | | \$17,500 | 6151 666
 | \$134,000 |
| NROOM STEAM LO | | \$/UNIT | \$5,000.00 | \$500.00 | \$2,000.00 | \$1,000.00 | \$7,000.00 | \$1,000.00
 | \$1,000.00 | \$6,000.00 | \$11.00 | \$8.00 | \$8.00
 | \$7.00 | \$2,000.00 | \$800.00 | \$7.00 | \$5.00 | \$500.00
 | \$2,000.00 | | | | |
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 | | | | | 000 07 | 16,000
 | |
| -1 - CH #2] - CLEA | | COST | \$3,000 | \$4,000 | \$1,000 | \$1,000 | \$30,000 | \$200
 | \$1,500 | \$3,000 | \$13,000 | \$8,000 | \$4,000
 | \$3,500 | \$8,000 | \$600 | \$3,500 | \$5,000 | \$3,000
 | \$6,000 | 0\$ | 0\$ | 0\$ | 0\$ | \$0
 | 0\$ | 0\$ | 0\$ | \$0
 | | 006'6\$ | | | \$16,300 | 44.4
 | \$125,000 |
| RALIZATION (ECO | | \$/UNIT | \$3,000.00 | \$2,000.00 | \$1,000.00 | \$200.00 | \$15,000.00 | \$500.00
 | \$1,500.00 | \$3,000.00 | \$13.00 | \$8.00 | \$8.00
 | \$7.00 | \$8,000.00 | \$300.00 | \$7.00 | \$5.00 | \$3,000.00
 | \$3,000.00 | | | | |
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| DING 2700 | į | Ė | - | 2 | - | 2 | 2 | -
 | - | - | 1,000 | 1,000 | 200
 | 200 | - | 2 | 200 | 1,000 | -
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 | 1 |
| BUIL | | | 1 Demolition/Removal of Abandoned Equipment | 2 Install (2) Large Fire Doors | 3 Seal Penetrations | 4 Install (2) Duct Mounted Fire Dampers | Install (2) 25 HP Steam Boilers | sceiver/Pumps
 | 7 Install Chemical Feed System | 8 Electrical Work for Pumps, Boiler Fans, etc. | 9 Steam Piping to 4TH Floor Cleanrooms | 10 Condensate Piping to 4TH Floor Cleanrooms | 11 Steam Piping to 2ND Floor Cleanrooms
 | 12 Condensate Piping to 2ND Floor Cleanrooms | 13 Miscellaneous Steam Valves, Strainers, etc. | 14 Condensate Pump Sets For Cleanrroom Feeds | 15 Make-up Water Feed including Valving | 6 Natural Gas Piping From First Floor | 17 Miscellaneous Natural Gas Valves, Strainers, et
 | 18 Provide Vent Stack(s) Thru Roof | 6 | Oi | 77 | 22 | 33
 | 7: | 35 | 9: |
 | SUBTOTAL | OVERHEAD AND PROFIT | CITY COST INDEX MULTIPLIER | DIFFICULTY FACTOR | CONTINGENCY (15 %) | SIOH(5.5%) & DESIGN FEE(6%)
 | BASE TOTAL COST |
| | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #2) - CLEANROOM STEAM LOADS TO NEW STEAM BOILERS (MR #43) | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #2) - CLEANROOM STEAM LOADS TO NEW STEAM BOILERS (MR #43) | NO. DESCRIPTION QTY UNIT #12) - CLEANROOM STEAM LOADS TO NEW STEAM BOILERS (MR #43) NO. DESCRIPTION QTY UNIT #100ST \$1UNIT COST COST COST | DESCRIPTION QTY UNIT WATERIAL COST \$1,000 \$5,000 \$1,000 \$ | DESCRIPTION CC0-1 - CH #2) - CLEANROOM STEAM LOADS TO NEW STEAM BOILERS (MR #43) TOTAL TOTAL TOTAL BARE BAR | DESCRIPTION QTV UNIT WATERIAL SAUNO S5,000 S1,000 DESCRIPTION QTY UNIT WATERIAL LABOR S5.000 | DESCRIPTION QTY UNIT MATERIAL LABOR S5,000 | DESCRIPTION QTY UNIT SUUNIT COST SCOOL OO | DESCRIPTION GTY UNIT MATERIAL LABOR S5,000 S1,000 DESCRIPTION QTY UNIT WATERIAL LABOR BARE LOST S1,000 S1,0 | DESCRIPTION QTV UNIT SUNIT COST SUNIT COST SUNIT COST SUNIT COST COST SUNIT COST COST SUNIT COST COST COST SUNIT COST COST COST COST SUNIT COST COST SUNIT COST COST COST SUNIT COST DESCRIPTION QTY UNIT MATERIAL LABOR S5.000 | DESCRIPTION QTY UNIT MATERIAL LABOR STEAM LOADS TO NEW STEAM BOILERS (MR #43) | DESCRIPTION QTY UNIT SILURI COST SILORO SIL | DESCRIPTION QTV UNIT MATERIAL LABOR S500.00 S500.00 S500.00 S1,000 DESCRIPTION QTY UNIT MATERIAL LABOR S5,000 S5,000 S5,000 S1,000 DESCRIPTION QTY UNIT SILURI COST SILORO SIL | DESCRIPTION QTY UNIT WATERIAL LABOR S5,000 S5,000 S5,000 S1,000 DESCRIPTION COTAL Lot \$1,000 to | DESCRIPTION QTY UNIT WATERIAL LABOR SECTION | DESCRIPTION GTY UNIT MATERIAL LABOR STOON OF STOON STEAM BOILERS (AIR #43) | Description Particle Partic | DESCRIPTION QTY UNIT WATERIAL LABOR DESCRIPTION QTY UNIT SJUNIT COST CO | DESCRIPTION QTY UNIT NATERIAL LABOR S\$0.000 | DESCRIPTION CTV UNIT NATERIAL LABOR SEGONO | DESCRIPTION COTY LANGE | DESCRIPTION QTY UNIT MATERIAL LABOR COST COS | DESCRIPTION COST | DESCRIPTION OITY UNIT MATERIAL LABOR BARE COST STOOM | DESCRIPTION OTT UNIT WATERLALL LABOR STOOM STEAM BOILERS (MR #43) | DESCRIPTION CTY UNIT WAT FEAL LABOR STEAM BOILERS (ARR 443) DESCRIPTION CTY UNIT SUUNIT COST STOOK S | DESCRIPTION QTY UNIT WATERALL LABOR STOOD NEW STEAM BOILERS (ARR 443) DESCRIPTION QTY UNIT STOOD NEW STOOD STOOD | DESCRIPTION CITY LIAN STOOM | DESCRIPTION QTY UNIT WATERAL COST SURVINIT COST C | Percentage Part P |

3. Building 2700 - Domestic Hot Water

The domestic hot water loads will be dedicated to a new gas-fired hot water generator located in the old boiler plant in the basement. The generator replaces existing steam fed heat exchangers that have failed in recent years. The circulating pumps which had also failed, in 1995, will be assumed to be either repaired or replaced and subsequently not in the construction estimate for this change.

The total cost for converting the domestic hot water load to a nominal 1200 mmBtu/hr (output) generator with a 1500 gallon storage capacity is estimated to be near \$54,000.

Entech Engineering, Inc.

		ILER ROOM	COMMENTS			Including Foundation Work	L																															
		DING 2700 DECENTRALIZATION (ECO-1 - CH #3) - NEW DOMESTIC HOT WATER GENERATOR IN EXISTING BOILER ROOM	TOTAL	COST	\$6,000	\$12,000	\$2,000	\$5,000	\$2,000	\$3,000	\$2,000	\$0	\$0	\$0	0\$	0\$	0\$	\$	0\$	0\$	0\$	0\$	0\$	\$0	\$0	0\$	0\$	\$0	0\$	0\$	\$0	\$32,000	\$9,500			\$6,300	\$6,000	\$54,000
	图	TER GENERATO	ABOR	8	\$3,000	\$4,000	\$1,000	\$2,000	\$1,000	\$2,000	\$1,000	\$0	0\$	0\$	0\$	0\$	0\$	0\$	0\$	0\$	0\$	0\$	\$0	\$0	0\$	0\$	0\$	\$0	0\$	0\$	\$0		\$7,700			\$3,300		\$25,000
	FORT MONMOUTH PROJECT COST ESTIMATE	MESTIC HOT WA	LAB	\$/UNIT	\$3,000.00		\$1,000.00			\$2,000.00																											3,000	
	FORT MC ROJECT CO	CH #3) - NEW DC	RIAL	cos	\$3,000	\$8,000	\$1,000	\$3,000	\$1,000	\$1,000	\$1,000	\$0	0\$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0\$	\$0	80	0\$	0\$		\$1,800			\$3,000		\$23,000
	<u> </u>	IZATION (EC0-1 -	MATERIAL	\$/UNIT	\$3,000.00	\$8,000.00	\$1,000.00	\$3,000.00	\$5.00	\$1,000.00	\$1,000.00																										3,000	
		CENTRAL	TINO		Lot	Each	Ę	Each	Each	Lot	Lot																											
		IG 2700 DE	ΩTY		F	-	-	F	200	-	-																				_							
		BUILDIN	DESCRIPTION		Demolition/Removal of Abandoned Equipment	2 Install New Natural Gas DHW Generator	3 Electrical Work for Controls, etc.	4 Provide Vent Stack(s) Thru Roof	5 Natural Gas Piping From Local Connection	6 Natural Gas Valving	7 Rework Existing DHW Piping																					SUBTOTAL	OVERHEAD AND PROFIT	CITY COST INDEX MULTIPLIER	DIFFICULTY FACTOR	CONTINGENCY (15 %)	SIOH(5.5%) & DESIGN FEE(6%)	BASE TOTAL COST
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18-Jun-9

4. Building 2700 - Cafeteria Equipment Operating on Steam Converted to Gas-Fired:

The Cafeteria has operated with equipment that will now be replaced as part of the decentralization of Building 2700 Boiler Plant. Four (4) pieces of equipment used for cooking, warming or dishwashing will be replaced by gas-fired equipment. The estimated cost to install the equipment alone was given by Fort Monmouth personnel equating to about \$18,000.

Miscellaneous work outside the scope for actual equipment replacement is estimated to bring the costs up to about \$35,000 for this particular change. These changes are expected to have no impact on the electric model.

		COMMENTS																																			
	A EQUIPMENT	TOTAL	COST	\$2,500	\$11,000	\$2,000	\$2,000	\$2,000	\$2,000	S	0\$	0\$	0\$	\$0	0\$	0\$	\$0	0\$	0\$	0\$	0\$	0\$	0\$	0\$	\$0	\$0	\$0	\$0	0\$	0\$	\$21,500	\$6,000			\$3,900	\$4,000	1000,65\$
된	BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #4) - NEW GAS FIRED CAFETERIA EQUIPMENT	SO.	ပ္ပ	\$1,500	\$3,000	\$1,000	\$1,000	\$1,000	\$1,000	0\$	0\$	0\$	0\$	0\$	80	0\$	0\$	\$0	\$	9	\$0	\$0	0\$	0\$	0\$	\$0	0\$	\$0	0\$	0\$		\$4,700			\$1,800		\$15,000
FORT MONMOUTH PROJECT COST ESTIMATE	H#4) - NEW GAS	LABOR	\$/UNIT	\$1,500.00	\$3,000.00	\$1,000.00	\$1,000.00	\$5.00																											0000	2,000	
FORT MC	ATTON (ECO-1 - C	MATERIAL	SOS	\$1,000	\$8,000	\$1,000	\$1,000	\$1,000	\$1,000	0\$	\$0	0\$	0\$	\$0	\$0	0\$	\$	90	0\$	\$	\$0	\$0	\$0	\$0	\$0	0\$	0\$	\$0	0\$	\$0		\$1,300			\$2,100		VVV,014
14	00 DECENTRALIZ	MAT	#NU/\$	\$1,000.00	\$8,000.00	\$1,000.00	\$1,000.00	\$5.00	\$1,000.00																											2,000	
	ILDING 27	TINO		5	For	2	Each	Each	Lot																												
	BC	Σtο		-	-	-	-	200	F																												
		NO. DESCRIPTION		1 Demolition/Removal of Existing Equipment	2 Install New Natural Gas-Fired Cafe. Equipment	3 Electrical Work for Controls, etc.	4 Provide Vent Stack(s) Thru Roof	5 Natural Gas Piping From Local Connection	6 Natural Gas Valving	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	SUBTOTAL	OVERHEAD AND PROFIT	CITY COST INDEX MULTIPLIER	DIFFICULTY FACTOR	CONTINGENCY (15 %)	SIOH(5.5%) & DESIGN FEE(6%)	BASE TOTAL COST

G:M130.05\SS\ECOS\ECO1CH#4.WK4

02-Jul-96

5. Building 2704 - Heating Load Replacement with New Steam Boilers:

New steam boilers are proposed for supporting the heating loads for Building 2704. A new building/room must be added to accommodate the new boilers. The sizing for each of the two boilers is 65% of the peak load of 800 lbs/hr or 520 lbs/hr, thus equating to about a 16 HP of load for each. A nominal size of 20 HP would be the selection for these boilers.

The estimated cost to install the steam boilers in a new building addition to Building 2704 is \$240,000.

| | COMMENTS | | 10 | | | 0 | 0 | 0 Including Insulation | 0 Including Insulation |
 | 0 Including Insulation | 0 | 0 | 0 | 0 | 0
 | 0 | 0 | 0 | 0 |
 | 0 | 0 | 0 | 0
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N BOILERS	TOTAL BARE	COST	\$60,00
 | \$1,40 | \$17,50 | \$3,50 | \$5,00 | \$ | \$
 | 5 | \$ | 49 | €9 | \$
 | ₩. | 65 | G, | S.
 | · | Š | · · | ₩, | \$140,40
 | \$46,80 | | | \$28,10 | \$26,00 | \$241,000
 |
| DING 2704 STEAN | sor | ឫ | | \$10,000 | \$1,000 | \$1,000 | \$4,000 | | | \$2,000
 | \$200 | \$12,500 | \$200 | \$2,000 | 0\$ | 0\$
 | 0\$ | 0\$ | 0\$ | \$0 | 0\$
 | \$0 | \$0 | \$0 | OS
 | 9 | \$0 | \$0 | 0\$ |
 | \$40,000 | | | \$16,900 | | \$130,000
 |
| -1 - CH #5) - BUIL | Š | D/S | | | | | 7 | | | \$2,0
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| VALIZATION (ECO | ERIAL | COST | \$22,500 | \$24,000 | \$200 | \$1,500 | \$2,000 | \$800 | \$200 | \$4,000
 | \$200 | \$5,000 | \$3,000 | \$3,000 | \$ | \$0
 | 0\$ | 0\$ | 0\$ | \$0 | 0\$
 | \$0 | \$0 | 0\$ | 80
 | 0\$ | 80 | \$0 | 0\$ |
 | \$6,800 | | | \$11,200 | | \$86,000
 |
| IG 2700 DECENT | TAM | \$/UNIT | \$15.00 | \$12,000.00 | \$200.00 | \$1,500.00 | \$2,000.00 | \$8.00 | \$7.00 | \$4,000.00
 | 00'2\$ | \$10.00 | \$3,000.00 | \$1,500.00 | |
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| BUILDIN | UNIT | | SF | Each | Fot | Lot | Ę | Each | Each | Lot
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| | QTY | | 1,500 | 2 | 1 | 1 | - | 100 | 100 | 1
 | 100 | 200 | . 1 | 2 | |
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 | | | | | | 1
 |
| | DESCRIPTION | | 1 Install New Building/Addition for Boilers | 2 Install (2) 20 HP Steam Boilers | 3 Install Primary Condensate Receiver/Pumps Se | 4 Install Chemical Feed System | 5 Electrical Work for Pumps, Boiler Fans, etc. | 5 Steam Piping to Existing Bldg. 2704 Header | 7 Condensate Piping to Existing Bldg. 2704 Head | 9 Miscellaneous Steam Valves, Strainers, etc.
 | 9 Make-up Water Feed including Valving | 3 Undergrnd. Nat. Gas Piping From Outdoor Hea | 1 Miscellaneous Natural Gas Valves, Strainers, et | 2 Provide Vent Stack(s) Thru Roof | 8 | 7
 | 5 | C | 1 | 6 | 6
 |](| | 2 | 8
 | | | 2 | | SUBTOTAL
 | OVERHEAD AND PROFIT | CITY COST INDEX MULTIPLIER | DIFFICULTY FACTOR | CONTINGENCY (15 %) | SIOH(5.5%) & DESIGN FEE(6%) | BASE TOTAL COST
 |
| | BUILDING 2700 DECENTRALIZATION (ECO-1 - CH #S) - BUILDING 2704 STEAM BOILERS | BUILDING 2700 DECENTRALIZATION (ECG-1 - CH #5) - BUILDING 2704 STEAM BOILERS TOTAL DESCRIPTION QTY UNIT MATERIAL LABOR BARE | QTY UNIT COST \$\text{\$\text{\$\text{\$\cdots}}}\$ SUILDING 2704 STEAM BOILERS TOTAL TOTAL | DESCRIPTION QTY UNIT MATERIAL S/LUNIT COST S/LOST DESCRIPTION QTY UNIT MATERIAL S20,000 \$5,000 \$10,000 | DESCRIPTION QTY | Partial New Building/Addition for Boilers 1,500 SF Each \$1,000 SF Each \$1,000 SF Each \$1,000 SF Each \$1,000 SF \$1,000 SF \$1,000 | DESCRIPTION QTY UNIT MATERIAL LABOR BARE LABOR BARE LABOR BARE LABOR BARE LABOR LA | DESCRIPTION QTY UNIT WATERIAL LABOR BARE LOST SUIL DING 2704 STEAM BOILERS TOTAL LABOR BARE LOST SUIL DING 2704 STEAM BOILERS TOTAL LABOR BARE COST SUIL DING 2704 STO STO STO STO STO STO STO STO STO STO | Particular Par | Partial New Building/Addition for Boilers 1,500 SF SF,000 | DESCRIPTION QTY UNIT SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS TOTAL BARE COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS TOTAL COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS TOTAL COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS COST COST COST COST COST COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS COST COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 STEAM BOILERS COST COST SILULATION (ECC-1 - CH #5) - BUILDING 2704 FOR SILULATION (ECC-1 - CH | Paris Principle Principl | Particular Procession Pro | DESCRIPTION QTY | DESCRIPTION QTY UNIT WATERIAL LABOR BARE COST \$50.000 \$1.000 \$1.000 \$1.500 \$1. | Part Part | DESCRIPTION QTY UNIT StUIL DING 2700 DECENTRALIZATION (ECC-1 - CH #5) - BUIL DING 2704 STEAM BOILERS TOTAL BARE COST CO | DESCRIPTION QTY UNIT WATERIAL LABOR BARE COST ST.000 00 ST.000 00 ST.000 DESCRIPTION COT Lot \$1,000 S1,000 S1 | Install New Building/Addition for Boilers 1,500 SF | Part Part | Install New Building/Addition for Boilers 1500 SF 1500 S | Install New Building/Addition for Boilers 1,500 SF \$1,000 SF \$1,000 St. 500 St. | Install New Building/Addition for Boilers 1,500 SF \$1,000 SF \$1,000 SF \$1,000 SF \$1,000 SF \$20,000 S | TOTAL PARE | Install New BuildingAdditon for Boliers 1500 SF 41500 1500 15000 | Install New Building/Addition for Boilers 1,500 SF 1,000 1,0 | Trickle New Building/Addition for Boilers 1,500 SF 1,500 S | Total How Building/Addition for Boilers 1500 SF \$1,000 to \$2,000 to \$1,000 to \$2,000 to \$1,000 to \$2,000 to \$1,000 to \$2,000 to | Total | Total Prizate Prizat | Part Part | Packer P | Part Part | Part Part |

G:W130.05\SS\ECOS\ECO1CH#5.WK4

6. Building 2705 - Heating/Reheat Load Replacement with New Hot Water Boilers:

New hot water boilers are proposed for supporting the heating and reheat loads for Building 2705. A new building/room addition is required to accommodate the new boilers. The sizing for each of the two boilers is 65% of the peak load of 1,100 lbs/hr or 750 lbs/hr. This total equates to about 25 HP of boiler each. Two air handler steam coils and three steam unit heaters will be replaced by hot water equipment.

The estimated cost to install the hot water boilers in a new building addition to Building 2705 is \$302,000.

		SHAMEOO		1000,098	_	\$5,000 Including Foundation Work	,500		,600 Includes Insulation	\$10,000	\$12,000	,200	\$12,000	\$1,400 Includes Insulation	\$15,000	\$3,500	\$5,000	0\$	0\$	0\$	0\$	0\$	0\$	0\$	0\$	0\$	\$0	₩	OS		2001	\$56,000			\$35,300	000	000′;	
	ATER BOILERS	TOTAL	COST	\$60	\$42										\$15																5					\$31,000		
E	VG 2705 HOT WA	LABOR	ಶ	\$37,500	\$12,000	\$2,000	\$1,000	\$4,000					\$4,000	\$700	\$10,000	\$200	\$2,000	\$	0\$	S.	0\$	0\$	\$0	0\$	0\$	0\$	\$0	0\$	₩	\$		\$46,500			\$19,700		\$151,000	
FORT MONMOUTH	CH #6) - BUILDII	3	\$/UNIT	\$25.00	\$6,000.00	\$1,000.00	\$1,000.00	\$4,000.00	\$8.00	\$2,000.00	\$1,500.00	\$8.00	\$4,000.00	\$7.00	\$20.00	\$500.00	\$1,000.00)																		16,000		
FORT MONMOUTH PROJECT COST ESTIMATE	ZATION (ECO-1 -	RIAL	COST	\$22,500	\$30,000	\$3,000	\$1,500	\$2,000	\$800	\$6,000	\$7,500	\$1,600	\$8,000	\$700	\$5,000	\$3,000	\$3,000	90	\$0	\$0	\$	℃	\$0	\$ 0	\$0	0\$	0\$	0\$	0\$	\$0		\$9,500			\$15,600		\$120,000	
<u>a</u>	BUILDING 2700 DECENTRALIZATION (ECG-1 - CH#8) - BUILDING 2705 HOT WATER BOILERS	MATERIAL	\$/UNIT	\$15.00	\$15,000.00	\$1,500.00	\$1,500.00	\$2,000.00	\$8.00	\$3,000.00	\$2,500.00	\$8.00	\$8,000.00	\$7.00	\$10.00	\$3,000.00	\$1,500.00																			15,000		
	UILDING 2	LIND		SF	Each	Each	Lot	Lot	Each	Each	Each	Each	Ę	Each	Each	Ę	Each																					
	49	ΣĽO		1,500	2	2	-	1	100	2	3	200	-	180	200	-	2																					
		DESCRIPTION		1 Install New Building/Addition for Boilers	2 Install (2) 25 HP Hot Water Boilers	3 Install (2) 7.5 HP Hot Water Pumps	4 Install Chemical Feed System	5 Electrical Work for Pumps, Boiler Fans, etc.	6 Hot Water Piping to Existing Bldg. 2705 Header	7 New Hot Water Coils for AHU's	8 New Hot Water Unit Heaters	9 New Hot Water Piping	10 Miscellaneous HW Valves, Strainers, etc.	11 Make-up Water Feed including Valving	12 Undergmd Gas Piping From Outdoor Header	13 Miscellaneous Natural Gas Valves, Strainers, et		15	16	17	18	19	20	21	22	3	24	2	26			OVERHEAD AND PROFIT	CITY COST INDEX MULTIPLIER	DIFFICULTY FACTOR	CONTINGENCY (15 %)	ၜ္ဘ	BASE TOTAL COST	

Building 2700 Boiler Plant Decentralization Summary

Change	Material	Labor	SIOH	Design	Total
1) Building 2700 Steam Coils to MCA HW	\$159,000	\$215,000	\$21,000	\$22,000	\$417,000
2) Building 2700 Cleanrooms to Dedicated Boilers	\$125,000	\$134,000	\$14,000	\$16,000	\$289,000
3) Building 2700 DHW to Dedicated Gas-fired Generator	\$23,000	\$25,000	\$3,000	\$3,000	\$54,000
4) Building 2700 Cafeteria Equip. to Gas-fired	\$16,000	\$15,000	\$2,000	\$2,000	\$35,000
5) Building 2704 Steam Boilers	\$86,000	\$130,000	\$12,000	\$14,000	\$242,000
6) Building 2705 Hot Water Boilers	\$120,000	\$151,000	\$15,000	\$16,000	\$302,000
Totals	\$529,000	\$670,000	\$67,000	\$73,000	\$1,339,000

Construction Cost

Estimate.

The total construction cost estimate to perform the six changes for decentralizing the Building 2700 boiler plant is approximately \$1,340,000.

Fuel Savings

(Natural Gas). The total yearly fuel savings associated with this ECO is

Savings	Heating (mmBtu/yr)	Fuel (mmBtu/yr)	Nat. Gas (mcf/yr)	Fuel Cost (\$/yr)
Totals	27,000	36,685	35,580	\$267,000
Percent Reduction	53.8%	55.8%	55.8%	55.8%

Electric Savings.

The total yearly electric savings associated with this ECO is

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu)	Cost (\$/yr)
Non-Summer	(46)	(34,368)	(7,184)	(142)	(\$3,048)
Summer	56	13,980	7,904	(75)	\$1,959
Totals	10	(20,388)	720	(67)	(\$1,089)
Percent Reduction	2.2%	-14.6%	3.9%	-9.8%	-6.4%

Operation/Maintenance

Savings.

The operation and maintenance savings associated with this ECO is \$190,000 (\$490,000 - \$300,000).

Discussion.

Payback = 2.9 years

SIR = 5.32

The payback for this ECO is 2.9 years. Decentralization of Building 2700's central boiler plant is recommended. The use of the existing plant for generating steam should be stopped when feasible.

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LIFE CYCLE COST ANALYSIS SUMMARY
                                                   STUDY: MON1
    ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)

LCCID FY95 (92)
                                    REGION NOS. 2 CENSUS: 1
INSTALLATION & LOCATION:
PROJECT NO. & TITLE:
FISCAL YEAR DISCRETE PORTION NAME: ECO#1
ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY:
1. INVESTMENT
A. CONSTRUCTION COST $ 1199000.
B. SIOH
                           67000.
C. DESIGN COST
                            73000.
D. TOTAL COST (1A+1B+1C) $ 1339000.
E. SALVAGE VALUE OF EXISTING EQUIPMENT $
F. PUBLIC UTILITY COMPANY REBATE
G. TOTAL INVESTMENT (1D - 1E - 1F)
                                                $ 1339000.
2. ENERGY SAVINGS (+) / COST (-)
DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995
            UNIT COST SAVINGS ANNUAL $ DISCOUNT
                                                          DISCOUNTED
            $/MBTU(1)
   FUEL
                       MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)
   -15090.
                                                                  0.
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                                                           4577525.
                                                                 0.
                                                                  0.
                                                            4562435.
3. NON ENERGY SAVINGS(+) / COST(-)
  A. ANNUAL RECURRING (+/-)
                                                         $ 190000.
      (1) DISCOUNT FACTOR (TABLE A)
                                                 13.47
       (2) DISCOUNTED SAVING/COST (3A X 3A1)
                                                          $ 2559300.
  B. NON RECURRING SAVINGS (+) / COSTS (-)
                          SAVINGS(+) YR
                                           DISCNT
                                                   DISCOUNTED
              ITEM
                            COST(-) OC (1) (2)
                                           FACTR
                                                    SAVINGS(+)/
                                                   COST(-)(4)
                                          (3)
   d. TOTAL
                                 0.
                                                            0.
   C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)$ 2559300.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))$ 455978.
5. SIMPLE PAYBACK PERIOD (1G/4)
                                                             2.94 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)
                                                          $ 7121735.
7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =
                                                            5.32
    (IF < 1 PROJECT DOES NOT OUALIFY)
```

ECO-1A STEAM DECENTRALIZATION - OPTION A NEW STEAM BOILERS IN BUILDING 2700

Existing.

Same existing conditions as the Base Case.

Proposed.

No changes are required to the Base Case as it relates to this ECO

option.

Savings.

No changes.

Construction

Cost.

No changes.

Discussion.

This option was not evaluated because after further discussion with Fort Monmouth personnel no other year round steam loads other than the cleanroom reheat are required for Building 2700.

Entech Engineering, Inc.

ECO-1B STEAM DECENTRALIZATION - OPTION B NEW HOT WATER BOILERS FOR CLEANROOM

Existing.

Same existing conditions as the Base Case.

Proposed.

To utilize a hot water boiler in lieu of the steam boiler specified in the Base Case. Existing steam reheat coils in the four units would require replacement along with local piping and controls.

Proposed Natural Gas Usage

and Cost.

The average mmBtu/day of 31.9 for reheat does not need adjustment because no losses are assumed as compared to a steam boiler. The total then became 61.7 mmBtu/day for a total of 22,530 mmBtu/yr. The reheat cost for Building's 2700 and 2705 then becomes \$105,900. The total fuel cost related to the steam plant decentralization would be approximately \$208,000.

	Heating (mmBtu/day)	Total (mmBtu/day)	Natural Gas (mcf/yr)	Fuel Cost (\$/yr)
Reheat	11,650	14,560	14,120	\$105,900
New Totals	22,540	28,170	27,320	\$208,000

Note: All other totals for ECO-1 with the exception of reheat remain the same.

Proposed Plant Electric

Total.

The proposed electric demand and usage totals for ECO-1 Option B. All conditions are the same except that the pumps for this system are now hot water only. The motor size for each is estimated to be 5 HP. The electric cost for ECO-1 Option B is estimated to be \$20,100. Refer to Table ECO-1B-P on the following page.

Season	Demand (kW)	Off Peak (kWh)	On Peak (kWh)	Cost (\$)
Non-summer	415	145,524	55,581	\$17,116
Summer	76	25,298	9,062	\$2,941
Totals	491	170,822	64,643	\$20,057

Proposed Operating and Maintenance

Costs.

No changes from what was predicted for this change in the Base Case.

Total Daily Monitoring \$140,000 Equipment Maintenance \$160,000

Construction

Cost.

The only changes to the cost estimate are associated with the boiler plant for Building 2700's cleanrooms. The cost for this portion of the option is attached and totals \$323,000. The total cost for ECO-1B is \$1,372,000. The cost estimate summary totals for Option B are shown below. The detailed estimate follows.

Change	Material	Labor	SIOH	Design	Total
2) Building 2700 Cleanrooms to Dedicated HW Boilers	\$143,000	\$146,000	\$16,000	\$18,000	\$323,000
Option B Totals	\$547,000	\$682,000	\$69,000	\$74,000	\$1,372,000

FT. M⁽
BUILDING 2700 ELECTRIC MODEL

			HVAC Airside Equipment - General Info	rmation	I	Cooling Equipment	Total	Winter In
HVAC	Design/Site	Equip.	Field	Area	1	Field	Connected	Cemand C
Item	Designation	Type	Data/Reference/(Location)	Served	1	Data/Reference/(Location)	Load (kW)	kW/month_kv
282	HWP-1	Pump	Allis Charmers - Building 2706	MCA Hot Water	N/A		22 4	16 8
283	HWP-2	Pump	Allis Charmers - Building 2706	MCA Hot Water - Lag	N/A		22 4	16 8
284	HWP-3	Pump	Allis Charmers - Building 2706	MCA Hot Water - Standby	N/A		22 4	0.0
296	FWP-1	Pump	Aurora - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	00	00
297	FWP-2	Pump	Worthington - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	00	0.0
298	FWP-3	Pump	Ingersol Rand - Building 2700	Boiler Feedwater	N/A	(SYSTEM SHUTDOWN)	00	00
299	CP-1	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	00	0.0
300	CP-2	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	00	00
301	CP-7	Pump	Aurora - Building 2700	Condensate	N/A	(SYSTEM SHUTDOWN)	00	0.0
302	CP-8	Pump	Aurora - Building 2709	Condensate	N/A	(SYSTEM SHUTDOWN)	00	00
303	CP-1 (New)	Pump	unknown - Building 2706	Condensate	N/A	(SYSTEM SHUTDOWN)	00	0.0
320		F.D. Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		1 1	0.8
321	•	F.D. Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		11	0.8
322	•	Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		38	2.8
323		Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A		3.8	2.8
324	-	F.D. Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	0.6
325		F.D. Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	0.6
326	·	Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	0.6
327		Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads			0.8	0.6
328		Pump	Proposed Building 2704 Boiler Plant		N/A		2.6	2.0
329		F.D. Fan	Proposed Building 2705 Boiler Plant		N/A		11	0.8
330			Proposed Building 2705 Boiler Plant		N/A		1 1	0.8
331		Pump	Proposed Building 2705 Boiler Plant		N/A		5 6	4.2
332		Pump	Proposed Building 2705 Boiler Plant		N/A		5 6	4 2
333		Lighting	Proposed Building 2705 Boiler Plant	Building 2704 Lighting	N/A		26	2.0
			1	TOTALS:	1		96	55

FT. MONMOUTH, DEPARTMENT OF THE ARMY

BUILDING 2700 ELECTRIC MODEL - PROPOSED DECENTRALIZED HEATING SYSTEM TOTALS (Option B) TABLE ECO-1P-B

			inter Billi				nediate E			S	↓							
formation	Cooling Equipment	Total	Winter	intermed.	Summer		Peak	-	-Peak	Ott-	Peak		Peak		Peak		-Peak	
Area	Field	Connected	Demand	Demand	Demand	hrs/		hrs/		hrs/		hrs/		hrs/	1	hrs/		Demar
Served	Data/Reference/(Location)			kW/month	kW/month		kWh/Mo	day kWh/Mo		day	kWh/Mo	day	kWh/Mo		kWh/Mo	day	kWh/Mo	kW/Y
MCA Hot Water	N/A	22 4	16 B		0.0	12.0		8		9	6,048	6	2.688	0	0	0	0	11
MCA Hot Water - Lag	N/A	22 4	16.8	13 4	0.0	8.0	5,376	4	1,792	6	4,032	3	1,344	0	0	0		41
MCA Hot Water - Standby	N/A	22 4	0 0		0.0			0	0	0	0	0	0	0	0	0	0	4
Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	0.0	0.0		0.0	0.0		0	. 0	0	0	0	0	0	0	0	0	
Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	0.0	0.0		0.0	0.0		0	0	0	0	0	0	0	0	٥	0	L
Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	0.0	00	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	٥	0	4
Condensate	N/A (SYSTEM SHUTDOWN)	0.0	00	0.0	0 0	0.0	0	0	0	0		0	. 0	0	0	0	0	I
Condensate	N/A (SYSTEM SHUTDOWN)	00	00	0 0	0.0	0 0	0	0	0	0	0	0	0	0	0	0	0	L
Condensate	N/A (SYSTEM SHUTDOWN)	00	0.0	0 0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	
Condensate	N/A (SYSTEM SHUTDOWN)	00	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	
Condensate	N/A (SYSTEM SHUTDOWN)	00	0.0	0.0	0.0	0.0	0	0	. 0	0	0	0	0	0	0	0	0	
Building 2700 Cleanrooms	N/A	1 1	0.8	0.8	0.0	12 0	396	8	176	12	396	8	176	12	39 6	8	176	
Building 2700 Cleanrooms	N/A	11	0.8	0.8	0.0	30	99	0	0	3	9 9	0	0	0	0	0	0	1
Building 2700 Cleanrooms	N/A	3.8	2.8	28	2.8	12 0	1,354	8	602	12	1,354	. 8	602	12	1,354	- 8	602	
Building 2700 Cleanrooms	N/A	3.8	2.8	2.8	2.8	30	338	0	0	3	338	0	0	3	3 38	0	0	
Building 2704 Heating Load	1ªN/A	08	0.6	06	0.0	12 0	288	8	128	8	192	4	64	0	0	0	0	
Building 2704 Heating Load	19N/A	8.0	06	0.6	0,0	3 0		0	0	3	72	0	0	0	0	0	0	
Building 2704 Heating Loss	1s N/A	0.8	0 6	0.6	0.6	120	270	8	120	8	180	4	60	0	.0	0	0	
Building 2704 Heating Load	Is N/A	0.8	0.6	06	0.6	3 0	68	0	. 0	3	68	0	0	3	68	0	0	
Building 2704 Lighting	N/A	2.6	2.0	2.0	2.0	8.0	624	4	208	8	624	4	208	8	624	4	208	
Building 2705 Heat/Reheat	N/A	1.1	0.8	0.8	0.0	12 0	396	8	176	12	396	В	176	12	39 6	8	176	
Building 2705 Heat/Reheat	N/A	11	0.8	8.0	0.0	30	99	0	0	3	99	0	0	0	0	0	0	Ī
Building 2705 Heat/Reheat	N/A	56	4.2	4 2	4.2	12 0	2,016	8	896	12	2.016	8	896	_12	2,016	. 8	896	
Building 2705 Heat/Reheat	N/A	56	4.2	4.2	4.2	30	504	0	****	3	504	0	0	3	504	0	0	
Building 2704 Lighting	N/A	26	2.0	2.0	2 0	8.0	624	4	208	8	624	4	208	- 8	624	4	208	
TOTALS	T	96	5 5	48	17	118	19,964	64	7,682	105	16,418	53	6,214	65	5,696	36	2.058	4



RTMENT OF THE ARMY

ENTRALIZED HEATING SYSTEM TOTALS (Option B) co-1P-B

ille	ng Mon	ths	Inter	mediate E	illing M	onths	St	ımmer Bi	lling Mo	nths	1									
	On	Peak_	Off	Peak	On-	Peak	Off-	Peak	On-	Peak		Non-S	ummer			Sum	mer		Annual	
-	hrs/		hrs/		hrs/		hrs/	i	hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	l
,0	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day :	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	<u> </u>	kW/Yr.	KWH/Yr.	KWH/Yr.		\$	No.
4	8	3.584	9	6,048	6	2,688	0	0	0	0	121	56,44 8	25,088	\$6,345	0	0	0	\$0	\$ 6.345	282
.6	4	1,792	6	4,032	3	1,344	0	0	0	0	121	37 ,632	12,544	\$4,262	0	0	0	\$0	\$4,262	283
0	c	0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	284
0	0	0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	296
0	<u>c</u>	0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	297
0	0	0	0	0	0	0	0	0	0	0	0	0		\$0	0	0	0	\$0	\$0	298
0	C	0	0	0	0	0	0	0	0	0	0	0	0	\$0	_ 0	0	0	\$0	\$0	299
0	c	_0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0	0	\$0	\$0	300
0		0	0	0	0	0	0	0	0	0	0	0	0	\$0	0	0		\$0	\$0	301
0_	0	0	0	0	0	0	0	0	0	Ō	0	0	0	\$0	0	0	0	\$0	\$0	302
0	c	0	0	0	0	0	0	0:	0	0	0	0	0	\$0	0	0	0	\$0	\$0	303
-6	8	176	12	396	8	176	12	396	8	176	7.	3,168	1,408	\$355	0	1.584	704	\$150	\$505	320
.9	- 0	0	3	99	0	0	0.	0	0	Ő	7	792	0	\$104	0	0	0	\$0	\$104	321
4	8	602	12	1,354	в	602	12	1,354	- 6	602	23	10,829	4,813	\$1,212	11	5.414	2,406	\$617	\$1,829	322
8	C	0	3	338	0	0	3	338	0	0	23	2,707	0	\$357	11	1,354	0	\$189	\$ 545	323
В	e	128	8	192	4	64	0	0	0	0	5	1,920	768	\$215	0	0	0	\$0	\$215	324
.5	0	0	3	72	0	0	0	0	0	0	5	576	0	\$76	0	0	0	0.2	\$76	325
0		120	8	180	4	60	0	٥	0	0	5	1,800	720	\$202	2	0	0	\$21	\$223	326
8		0	3	68	0	0	3	68	0	0	5	540	0	\$71	2	270	0	\$38	\$109	327
4	4	208	8	624	4	208	В	624	4	208	1 6	4,992	1,664	\$562	8	2,496	832	\$288	\$850 i	328
-6	e	176	12	396	8	176	12	396	. 8	176	7	3,168	1,408	\$355	0	1,584	704	\$150	\$505	329
.9	C	0	3	99	0	0	0	0	0	0	7	792	0	\$104	0	0	0	\$0	\$104	330
6	8	896	12	2,016	8	896	12	2,016	8.	896	34	16,128	7,168	\$1,805	17	8,064	3 584	\$919	\$2,724	331
4		0	3	504	0	0	3	504	0	0	34	4,032	0	\$531	17	2,016	0	\$281	\$812	332
4	4	208	8	624	4	208	8	624	4	208	16	4,992	1 664	\$5 62	8	2 496	83.7	\$289	\$850	333
.4	64	7,682	105	16,418	53	6,214	65	5,696	3 6	2,058	415	145,524	55,581	\$17,116	76	25,278	9.062	\$2,941	\$20,057	

| RS (MR #43) | SENEMACO | | | | | | - | _ | - | | Including Insulation
 | | !- | _ | | _
 | _ | | | | |
 | | | | |
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 | | | |
|------------------|---|--|---|--------------------------------|--|---|--|--|--|---
--|--|---|--|---
--|---|--|---
--|---|--|---|--
--|--|--|--
---|--|---------------------|----------------------------|--|--
--|---|
| OT WATER BOILE | TOTAL | COST | \$8,000 | \$5,000 | \$3,000 | \$3,000 | \$44,000 | \$2,250 | \$2,500 | \$9,000 | \$32,000
 | \$22,500 | \$16,000 | \$3,500 | \$14,000 | \$7,000
 | \$10,000 | \$3,500 | \$10,000 | 0\$ | \$0 | \$0
 | \$0 | \$0 | \$0 | \$0 | 0\$
 | \$0 | \$0 | \$195,300 | \$56,000 | |
 | \$37,700 | \$34,000 | \$323,000 |
| OADS TO NEW H | 80 | 8 | \$5,000 | \$1,000 | \$2,000 | \$2,000 | \$14,000 | \$1,000 | \$1,000 | \$6,000 | \$16,000
 | \$7,500 | \$8,000 | \$1,500 | \$4,000 | \$3,500
 | \$5,000 | \$500 | \$4,000 | 0\$ | 0\$ | \$0
 | 0\$ | \$0 | O\$ | Ç\$ | 0
 | 0\$ | 0\$ | | \$44,700 | |
 | \$19,000 | | \$146,000 |
| IROOM STEAM L | HVI | \$/UNIT | \$5,000.00 | \$500.00 | \$2,000.00 | \$1,000.00 | \$7,000.00 | \$1,000.00 | \$1,000.00 | \$6,000.00 | \$8.00
 | \$2,500.00 | \$8.00 | \$1,500.00 | \$4,000.00 | \$7.00
 | \$2.00 | \$500.00 | \$2,000.00 | | |
 | | | | |
 | | | | | |
 | | 18,000 | |
| - CH #2) - CLEAN | RIAL | COST | \$3,000 | \$4,000 | \$1,000 | \$1,000 | \$30,000 | \$1,250 | \$1,500 | \$3,000 | \$16,000
 | \$15,000 | \$8,000 | \$2,000 | \$10,000 | \$3,500
 | \$5,000 | \$3,000 | \$6,000 | \$0 | 0\$ | 0\$
 | 0\$ | 0\$ | \$0 | \$0 | \$0
 | O\$ | 0,5 | | \$11,300 | |
 | \$18,700 | | \$143,000 |
| JZATION (ECO-18 | MATE | \$/UNIT | \$3,000.00 | \$2,000.00 | \$1,000.00 | \$500.00 | \$15,000.00 | \$1,250.00 | \$1,500.00 | \$3,000.00 | \$8.00
 | \$5,000.00 | \$8.00 | \$2,000.00 | \$10,000.00 | \$7.00
 | \$5.00 | \$3,000.00 | \$3,000.00 | | |
 | | | | |
 | | | | | |
 | 000 01 | 16,000 | |
| CENTRAL | TINO | | Į
Co | Each | Lot | Each | Each | Lot | rot | Lot | Each
 | Each | Each | Each | į | Each
 | Each | Ļŏ | Each | | |
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| VG 2700 DI | ΔŢ | | 1 | 2 | - | 2 | 2 | 1 | - | 1 | 2,000
 | က | 90, | | - | 200
 | .00 | - | 2 | | |
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| BULLDIA | | | 1 Demolition/Removal of Abandoned Equipment | 2 Install (2) Large Fire Doors | 3 Seal Penetrations | 4 Install (2) Duct Mounted Fire Dampers | 5 Install (2) 25 HP Hot Water Boilers | 5 Install Primary Hot Water Pumps | 7 Install Chemical Feed System | B Electrical Work for Pumps, Boiler Fans, etc. | 4TH Floor Cleanroon
 | | | | 의 | 4 Make-up Water Feed including Valving
 | o Natural Gas Piping From First Floor | 3 Miscellaneous Natural Gas Valves, Strainers, et | Provide Vent Stack(s) Thru Roof | | |
 | | 7 | | |
 | | | SUBTOTAL | OVERHEAD AND PROFIT | CITY COST INDEX MULTIPLIER | DIFFICULTY FACTOR
 | CONTINGENCY (15%) | SIUT(5.5%) & UESIGN FEE(6%) | BASE TOTAL COST |
| | BUILDING 2700 DECENTRALIZATION (ECO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) | BUILDING 2700 DECENTRALIZATION (ECO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) OTY UNIT MATERIAL LABOR | DESCRIPTION | DESCRIPTION QTY | DESCRIPTION CTOP DECENTRALIZATION (ECO-18 · CH #2) · CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) | DESCRIPTION QTY | DESCRIPTION CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) LOTAL LO | DESCRIPTION CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) TOTAL BARE TOTAL BARE COST STOWN S | DESCRIPTION CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) TOTAL TOTAL TOTAL BARE SIUMIT COST SI 000 | DESCRIPTION CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) TOTAL BARE DESCRIPTION QTY UNIT #MATERIAL LOST \$1,000 \$1,00 | DESCRIPTION CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) LOTAL LO | DESCRIPTION CCO-18 - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) Lot \$1,000.00 \$ | DESCRIPTION QTY UNIT MATERIAL LABOR STOOM | DESCRIPTION QTY UNIT MATERIAL LABOR FAMOR TOTAL BARE Install (2) Large Fire Dours 2 Each St.000.00 \$3,000.00 \$1,000.00 | DESCRIPTION COT Lot \$3,000.00 \$1 | DESCRIPTION CCO-18 - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) Lot \$1,000.00 \$1,000 \$ | DESCRIPTION QTY UNIT MATERIAL LOST COST TOTAL Install (Ior/Removal of Abandoned Equipment Install (Ior) | DESCRIPTION QTY UNIT MATERIAL LABOR S5,000.00 S5,000.00 S1,000.00 S1,000 | DESCRIPTION QTY UNIT MATERIAL LABOR S5,000 S1,000 S1,000 S1,000 S1,000 S2,000 S1,000 S1,000 S2,000 S1,000 S2,000 S1,000 S2,000 S1,000 S2,000 S1,000 S2,000 DESCRIPTION QTY UNIT MATERIAL LABOR BARE LODST STOOM | DESCRIPTION QTY UNIT WATERIAL LABOR STOOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) | DESCRIPTION CONTINUATER BOILERS (MR #43) CONTINUATER BOILERS (MR #44) CONTINUATER BOI | DESCRIPTION ACCOUNT | DESCRIPTION QTY UNIT MATERIAL LABOR BARE LOST STOOL OF \$1,000 \$5,0 | DESCRIPTION COST STOOM CCO-18 - CH #2) - CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) CLEANROOM STEAM LOADS TO NEW HOT WATER BOILERS (MR #43) CLEANROOM STOOM | DESCRIPTION QTY UNIT MATERAL LABOR STOOK OF S | DESCRIPTION QTY UNIT MATERIAL LABOR BARE LOTAL LABOR BARE LOTAL LABOR BARE LOTAL LABOR BARE LOTAL LABOR LOTAL LABOR LOTAL LABOR LOTAL LOTAL LABOR LOTAL LO | DESCRIPTION CITY UNIT MATERIAL LABOR DESCRIPTION COST CO | DESCRIPTION OTY UNIT MATERIAL LABOR ST.000 | DESCRIPTION OTY UNIT WATERIAL LABOR Each \$5,000 \$1 | DESCRIPTION CTY | DESCRIPTION QTY | DESCRIPTION GTY UNIT MATERAL LAG R 2000 ST | DESCRIPTION GTY UNIT WATERAL LABOR EARLY COST COS | DESCRIPTION OTT UNIT MATERIAL COST | DESCRIPTION OIT UNIT WATERIAL COST SLOWED COST SLOWED COST |

Fuel Savings.

(Natural Gas)

The total yearly fuel savings associated with Option B of ECO-1 is \$273,000 or \$6,000 than the Base Case (with steam boilers).

Savings	Heating (mmBtu/day)	Fuel (mmBtu/day)	Natural Gas (mcf/yr)	Fuel Cost (\$/yr)
Totals	27,670	37,525	36,400	\$273,000
Percent Reduction	55.1%	57.1%	57.1%	57.1%

Electric Savings. The total yearly electric savings (cost) when compared to ECO-1 (Base Case) is (-\$2,989).

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu)	Cost (\$/yr)
Non-Summer	(67)	(40,212)	(9,373)	(169)	(\$4,303)
Summer	38	8,562	5,978	50	\$1,314
Totals	(29)	(31,650)	(3,395)	(119)	(\$2,989)
Percent Reduction	-6.3%	-22.7%	-5.5%	-15.8%	-17.5%

Operation/Maintenance

Savings.

Same as predicted in the Base Case or \$190,000.

Discussion.

Payback = 3.0 years

SIR = 5.25

The payback associated with this ECO is 3.0 years. The difference in construction costs between the hot water boilers and the steam boilers is relatively small when considering the entire decentralization total. The elimination of steam can in some cases improve the controllability of reheat systems. If considered prudent the changeout to hot water for the reheat of the cleanroom units is recommended.

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) REGION NOS. 2 CENSUS: 1 INSTALLATION & LOCATION: PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#1B ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 1229000. B. SIOH \$ 69000. C. DESIGN COST \$ 74000. D. TOTAL COST (1A+1B+1C) \$ 1372000. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$
F. PUBLIC UTILITY COMPANY REBATE \$ 0. 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 1372000. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED FUEL \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) A. ELECT \$ 25.12 -119. \$ -2989.
B. DIST \$.00 0. \$ 0.
C. RESID \$.00 0. \$ 0.
D. NAT G \$ 7.28 37525. \$ 273182.
E. COAL \$.00 0. \$ 0.
F. LPG \$.00 0. \$ 0.
M. DEMAND SAVINGS \$ 0.
N. TOTAL 37406. \$ 270193. 13.86 -41431. 16.99 0. 17.38 0. 17.14 \$ 4682340. 13.56 \$ 0. 0. 15.12 13.47 0. \$ 4640908. 3. NON ENERGY SAVINGS (+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 190000. (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) 2559300. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED COST(-) OC FACTR SAVINGS(+) COST(-) ITEM SAVINGS(+)/ (1) (2) (3) COST(-)(4) 0. d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 2559300. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 460193. 5. SIMPLE PAYBACK PERIOD (1G/4) 2.98 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 7200208. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =

(IF < 1 PROJECT DOES NOT OUALIFY)

ECO-1C STEAM DECENTRALIZATION - OPTION C OPERATE CLEANROOMS WITH MCA HOT WATER

Existing.

Same existing conditions as the Base Case.

Proposed.

No changes proposed.

Savings.

No changes.

Construction

Cost.

No changes.

Discussion.

This ECO was not analyzed further because the small loads associated with the cleanroom reheat would not be sufficient to allow the new boilers in Building 2700 to operate properly during the cooling season. A firing turndown ratio ranging between 10 to 1 and 20 to 1 would be required for meeting these reduced summer time loads. Also, the cost estimate to route the dedicated piping from Building 2706 to the cleanroom units on the fourth floor would be comparable to the installation of the new boilers on the fourth floor. Note: The dedicated line would require it's own pump arrangement and the cleanroom units would have to be converted to hot water also (ie: coils, piping and controls).

ECO-1D STEAM DECENTRALIZATION - OPTION D ELECTRIC HOT WATER GENERATOR

Existing.

Same existing conditions as the Base Case.

Proposed.

No changes proposed.

Savings.

No changes.

Construction

Cost.

No changes.

Discussion.

Since the construction costs between the proposed gas unit versus the electrical unit would be comparable and the energy costs using electric would be higher, this ECO needs no further investigation. Note: The gas needed in the proposed base case is located in the near vicinity of the existing domestic hot water generators thus minimizing the associated impact of the gas piping.

ECO-1E STEAM DECENTRALIZATION - OPTION E DECENTRALIZED DOMESTIC HOT WATER SYSTEM

Existing.

Same existing conditions as the Base Case.

Proposed.

To install approximately forty (40) light duty electric water heaters at point of use locations such as bathrooms, etc. This change will reduce the losses seen in the central distribution system by approximately 20% and has the benefit of reduced energy because of the elimination of inefficiency in the generator itself. The average size required is a fifty (50) gallon storage capacity with a 4000 watt electric heating element. This new concept would eliminate the need for the large central DHW distribution system.

Proposed Natural Gas Usage

and Cost.

The average mmBtu/day of 5.6 for DHW would be eliminated from the gas billing. This equates to a reduction in yearly fuel consumption of 2,475 mcf. The total cost of firing natural gas for the decentralized system now becomes \$192,490/yr. The totals for the other areas are the same and the summary becomes.

Savings	Heating	Fuel	Natural Gas	Fuel Cost
	(mmBtu/day)	(mmBtu/day)	(mcf/yr)	(\$/yr)
DHW Usage Totals	21,170	26,460	25,665	\$192,490

Proposed Electric

Total.

The proposed electric demand and usage totals associated with this option will rise. The proposed heating load is reduced by about 20% to 4.5 mmBtu. The cost for the electric including the heating of the decentralized water heaters is \$36,729.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	458	254,880	117,392	1,271	\$28,216
Summer	90	77,460	39,136	398	\$8,513
Totals	548	332,340	156,528	1,669	\$36,729

Refer to Table ECO-1E-P on the following page.

FT. MC BUILDING 2700 ELECTRIC MODEL -

			HVAC Airside Equipment - General Inform	ation	Cooling Equipment	Total	Winter Intern
HVAC	Design/Site	Equip.	Field	Area	Field	Connected	Demand Dem
Item	Designation	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month_kW/m
282	HWP-1	Pump	Allis Charmers - Building 2706	MCA Hot Water	N/A	22 4	16.8
283	HWP-2	Pump	Allis Charmers - Building 2706	MCA Hot Water - Lag	N/A	22 4	16 8
284	HWP-3	Pump	Allis Charmers - Building 2706	MCA Hot Water - Standby	N/A	22 4	0.0
296	FWP-1	Pump	Aurora - Building 2700	Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	00	0.0
297	FWP-2	Pump	Worthington - Building 2700	Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	0 0	0 0
298	FWP-3	Pump	Ingersol Rand - Building 2700	Boiler Feedwater	N/A (SYSTEM SHUTDOWN)	0 0	0.0
299	CP-1	Pump	Aurora - Building 2700	Condensate	N'A (SYSTEM SHUTDOWN)	0 0	0.0
300	CP-2	Pump	Aurora - Building 2700	Condensate	N/A (SYSTEM SHUTDOWN)	0 0	0 0
301	CP-7	Pump	Aurora - Building 2700	Condensate	N/A (SYSTEM SHUTDOWN)	00	00
302	CP-8	Pump	Aurora - Building 2700	Condensate	N/A (SYSTEM SHUTDOWN)	0 0	0.0
303	CP-1 (New)	Pump	unknown - Building 2706	Condensate	N/A (SYSTEM SHUTDOWN)	0 0	00
320		F.D Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A	1 1	0 B
321		F.D Fan	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A	11	0.8
322		Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A	0 B	0.6
323	·	Pump	Proposed as New in MR # 43	Building 2700 Cleanrooms	N/A	0.8	0.6
324		F.D Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads		0.8	0.6
325	<u> </u>	F.D Fan	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads		0.8	0 €
326	i	Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads	N/A	8.0	0.6
327		Pump	Proposed Building 2704 Boiler Plant	Building 2704 Heating Loads		0.8	0.6
328		Pump	Proposed Building 2704 Boiler Plant	Building 2704 Lighting	N/A	2.6	2.0
329		F.D Fan	Proposed Building 2705 Boiler Plant	Building 2705 Heat/Reheat	N/A	1 1	8.0
330		F.D. Fan	Proposed Building 2705 Boiler Plant	Building 2705 Heat/Reheat	N/A	11	0.8
331	:	Pump	Proposed Building 2705 Boiler Plant		N/A	5 6	4 2
332		Pump	Proposed Building 2705 Boiler Plant	# 11 min - 1 min	N/A	5 6	4.2
333			Proposed Building 2705 Boiler Plant	Building 2704 Lighting	N/A	26	2 0
334		DHW Heat	Proposed Building 2700 Decentralized DH	Building 2700 DHW	N/A	160 0	8.0
				TOTALS		253	61

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - PROPOSED DECENTRALIZED HEATING SYSTEM TOTALS (Option E)

TABLE ECO-1E-P

							Vinter Billi	ng Mor	nth <u>s</u>		mediate E	Billing N	onths		ummer B	illing Mo	onths	1 .	
	Cooling Equipment	Total	Winter	Intermed.	Summer	Off	Peak	On	-Peak	Off-	Peak	On-	Peak	Of	-Peak	Or	-Peak		No
Area	Field	Connected		Demand	Demand :	hrs/		hrs/		hrs/	- i	hrs/		hrs/		hrs/		Demand	Off-Pea
Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	dav	kWh/Mo	kW/Yr.	KWH/Yr
	N/A	22 4	16 8	13 4	0.0	12	8,064	8	3,584	9	6,048	6	2,688	- (0	0	0	121	56.4
Hot Water - Lag	N/A	22 4	16 8	13 4	0.0		5,376	4	1,792	6	4.032	3	1,344		0	0	0	121	37.6
Hot Water - Standby	N/A	22 4	0.0	0 0	0.0		0	0	0	0	0	0	0		0	0		0	
r Feedwater	N/A (SYSTEM SHUTDOWN)	00	00	0.0	0.0		0	0	0	0	0	0	0	-		0		0	
r Feedwater	N/A (SYSTEM SHUTDOWN)	0.0	0.0	00	0.0		0	0	0	0		0	- 0	- 6				- <u>o</u>	
r Feedwater	N/A (SYSTEM SHUTDOWN)	00	0.0	0.0	0.0		0	0	0	0	0	0	0	- 0		- 0	<u></u>	0	
iensate	N/A (SYSTEM SHUTDOWN)	00	00	0 0	0.0	- C	0	0	0	0	0	0						0	
iensate	N/A (SYSTEM SHUTDOWN)	00	0.0	0.0	0.0		Ö	ō	0	0	0	0						-	
iensate	N/A (SYSTEM SHUTDOWN)	00	00	00	0.0	C	0	0	0	Ö	0	<u> </u>		C				0	
iensale	N/A (SYSTEM SHUTDOWN)	00	00	00	0.0		0	Ö	0	0	0	0				- 0		<u>0</u> .	
ensate	N/A (SYSTEM SHUTDOWN)	00	00	00	0.0	- c	0	0	0	0	0:			0				<u>0</u>	
ing 2700 Cleanrooms	N/A	1.1	0.8	0.8	0.0	12	396	8	176	12	396	B	176	12		8	176	7	3,16
ing 2700 Cleanrooms	N/A	11	0.8	0.8	0.0	3	99	0		3	99						110		7
ing 2700 Cleanrooms	NA	0.8	0.6	0.6	0.6	12	***	8	120	12	270	A	120	12			120	5	2,16
ing 2700 Cleanrooms	N/A	0.8	0.6	0.6	0.6	3	68	0		3	68	0		<u>:2</u>			120	5	
ing 2704 Heating Loads	sN/A	0.8	0.6	0.6	0.0	12	288	6	128	8	192	<u>-</u>	64			<u>c</u>		5	1,9:
ing 2704 Heating Loads	N/A	0.8	0.6	0.6	0.0	3	72			3	72	0	~					<u>~</u>	5.
ing 2704 Heating Loads	N/A	0.8	06	9.0	0.6	12		8	120	8	180	<u>-</u>	60	0				- 5	1,8
ng 2704 Heating Loads	AVA	0.8	0.6	0.6	0.6	3	68			3	68		00	— <u>-</u> 3		0		5	1,0
ng 2704 Lighting	N/A	2.6	2.0	2.0	2.0	8	624	4	208	8	624	<u>a</u>	208	8	624		208	16	4.9
ng 2705 Heat/Reheat	N/A	1 1 1	0.8	0.8	0.0	12		A	176	12	396		176	12			176		3.16
ng 2705 Heat/Reheat	N/A	1.1	0.8	0.8	0.0	<u></u> 3	99	0		3	99		<u>'</u>	<u>12</u>			170	7	7:
	N/A	56	4.2	4.2	4.2	12				12	2.016		896	12		C	896	34	16.12
ng 2705 Heat/Reheat	N/A	56	4.2	4.2	4.2	3	504			3.	504	0	- 550	3	504	<u> </u>	0.50	34	4.0
no 2704 Lighting	N/A	26	20	2.0	2.0	8	624	4	208	8	624	4	208	- 8			208	16	4.9
	N/A	160 0	8.0	8.0	8.0	3	14.400	3		3		3	8.000		14 400	 -	8.000	64	115.20
TOTALA		253	61	54	23	129		71		116	7.7, 7.0.0	60	13.940		19.365	43	9.784	458	254.88



THE ARMY D HEATING SYSTEM TOTALS (Option E)

_	mediate E				ummer B												
Off-	Peak	On-	-Peak	Off	-Peak	Ot	1-Peak			ummer		 .	Sum			Annual	
rs/	1	hrs.		hrs/	. 1	hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	l
ay	kWh/Mo	day	-kWh/Mo	day	IKWh/Mo	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	<u> </u>	kW/Yr.	KWH/Yr.	KWH/ Yr	- \$	\$	No.
9	6.048	6	2,688	0	0	0	0	121	56,448	25,088	\$6,345	00		Č	\$0	\$6.345	28
6	4,032	3	1,344	, o	0	0	0	121	37.63 2	12.544	\$4, 2 62	0	0	C C	\$0	\$4,262	28
0	0	0	0	0	0	0	0	. 0	0	0	\$0	0	0	С.	\$0	\$0	28
_ 0	0	0	0	0	0	0	0	. 0	0	00		0	0	C	\$0	S 0	29
0	0	0	0	0	, 0	0	0	0_	0	0	\$0	<u> </u>	. 0	C	\$0	\$0	29
0	0	0	0	0	. 0	0	0	0	0	0	\$0	0	0		\$ 0	S 0	29
_ 0	0	0		0	0	0	0	0	0	0	\$0	0.	0	C	\$0	\$0	299
0	0	0	0	0	0	0	0	0		0	\$0	0	0	Ç	\$0	\$0	300
0	0	0	0	0	. 0	0	0	0	0	0	\$0	0	0	C	\$0	\$0	30
_ 0	0	0	0	0	0	0	0	0	0	0	50	0	0	с	\$0	\$0	30:
_ 0	0	0	0	0	0	0	0	0	0	0	\$0	[o,	0	0	\$0	\$0	30:
12	396	8	176	12	396	В	176	7	3,168	1,408	\$355	0	1,584	704	\$150	\$505	320
_ 3	99	0	_ 0	0	0	0	0	7	792	0	\$104		0	0	\$0	\$104	321
_12	270	8	120	12	270	8	120	5	2,160	960	\$242	2.	1,080	480	\$123	\$365	322
3	68	0	0	3	68	0	0	5	540	0_	\$71	2,	270	0	\$38	\$109	323
8	192	4	64	0		0	0	5	1,920	768	\$215	0	0	0	\$0	\$215	324
3	72	0		0	0	0	0	5	576	0_	\$76	0.	0	0	\$0	\$76	325
8	180	4	60	0	0	0	0	5	1,800	720	\$202	2.	. 0	0	\$21	\$223	326
_ 3	68	0	0	3	68	0	0	5	540	0	\$71	2	270	С	\$38	\$109	327
. 8	624	4	208	. 8	624	4	208	16	4,992	1,664	\$562	8	2,496	832	\$288	\$850	328
12	396	8	176	12	396	8	176	7	3,168	1,408	\$35 5	0	1.584	704	\$150	\$505	329
3	99	. 0	0	0	0	0	0	7	792	0	\$104	0	. 0	0	\$0	\$104	330
12	2.016	8	896	12	2,016	8	896	34	16,128	7,168	\$1,805	17	8.064	3.584	\$919	\$2,724	331
3	504	0	0	3	504	0	0	34	4,032	0_	\$531	17	2,016		\$281	\$812	332
8	624	4	208	8	624	4	208	16	4,992	1, 6 64	\$56 2	8	2 496	832	\$288	\$850	333
3	14 400	3	8,000	3	14 400	3	8,000	64	115,200	64 000	\$12,355	32	57 600	32 000	\$6,217	\$18,572	334
116	30,087	60	13.940	76	19.365	43	9.784	458	254,880	117,392	\$28,216	90	77,460	39,136	\$8,513	\$36,729	

Proposed Operating and Maintenance

Costs.

An increase in maintenance costs of \$500 per individual DHW heater system for a total increase of \$20,000 above the Base Case proposal.

Total Daily Monitoring \$140,000 Equipment Maintenance \$180,000 Total \$320,000

Construction

Cost.

The only changes to the cost estimate are associated with the installation of 40 local electric hot water heaters in Building 2700. The cost for this portion of the option is attached and total \$97,000. The total cost for ECO-1E is \$1,382,000. The cost estimate summary totals for Option E are shown below.

Change	Material	Labor	SIOH	Design	Total
3) Decentralize Domestic Hot Water System	\$30,000	\$57,000	\$5,000	\$5,000	\$97,000
New Totals	\$536,000	\$702,000	\$69,000	\$75,000	\$1,382,000

Note: All other totals for ECO-1 with the exception of DHW remain the same.

PROJECT COST ESTIMATE PROJECT COST ESTIMATE PROJECT COST ESTIMATE PROJECT COST ESTIMATE PROJECT COST																											Catalogue Control Cont																The state of the s												COMMENTS						
rofit rofit	\$10,000	W#,114	\$11.400	i		_		\$19.800	222,224	\$56,000	200	S	Toe	0	808	3	90	0\$	Ce	0\$	2	C\$	2	6	0\$	O#		9	0\$	0\$	9	6	0\$	0.5		\$0	9	06	0\$	3	OS.	10\$		0\$	3	¥	200,0%	00000	\$12,000	\$20,02¢	420,000	\$18,000	COST		BARE	1 1	TOTAL	OT WATER SYSTEN			
rofit rofit	0	204,70	\$7.400				+ 1111	\$17.400			200	9	2	Ce	208	3	0\$	O.	00	20\$		S	0,4	-	80	O#		9	80	0\$	2	00	0\$	200		\$0	0*	00	0\$	3	C\$	0\$	2	099	•	Ş							COST		BOR			IZE DOMESTIC H	TE		
rofit rofit	5,000			_	1	_									_					_																								=									3	1.	₹	-		#3) - DECENTRAL	OST ESTIMA	ON MOUTH	
rofit rofit			-\$4 000					\$2,400	30		O.B.	U#	O#	9	25		0\$	ne.	S	0\$		0\$	O#	06	0\$	O.P.		0\$	₽	0.9		0	S .	0.5		0\$	0.00		9		CS.	0.4	-	0\$		05							COST	FOCO	ERIAL	14151		ON (ECO-1E - CH	PROJECT CO	FORTIN	
rofit rofit	5,000	000																													-				-												\$30.00	0000	\$100.00	\$200.00	\$200.00	\$250.00	#NON!		MA			DECENTRALIZATI			
rofit rofit			İ																																						i						i d	4000	Eag	28	Tach	Each			Ę	1		VG 2700 L			
DESCRIPTION Istal a 50 Gallon Storage Tank w/4 kW Coil work Local Hot & Coid Piping work Local Hot & Coid Piping wide Electrical Power, Wring, etc. wide Drilling, Parching, etc. for Retrofit Brotal Brotal BROTAL BRHEAD AND PROFIT V CÖST INDEX MULTIPLIER FIGULITY FACTOR					Ī	_																																									4	70	4	2	40	4			Ę	į		BUILDI			
O Low Low B O Low D </td <td>SIOH(5.5%) & DESIGN FEE(6%)</td> <td>SISTEMATION (12 /g)</td> <td>CONTINGENCY (15 %)</td> <td>DIFFICULTY FACTOR</td> <td>DIFFICIENT TV CANTOD</td> <td>CLLY COST INDEX MULTIPLIER</td> <td>ANTO ANOT MINEY MILL TIOL LED</td> <td>OVERHEAD AND PROFIT</td> <td>*</td> <td>SUBTOTAL</td> <td></td> <td>רוטאותם הויוווק, רמומוווק, פוכ. וטו מפונטוונ</td> <td>Descride Drilling Detabing of for Detroft</td> <td>Provide Electrical Power, Wining, etc.</td> <td>Builds I Dio o to I poor Vious VI</td> <td>Rework Local Hot & Cold Piping</td> <td>Install a 50 Gallon Storage Tank w/4 kW Coil</td> <td></td> <td></td> <td>DESCRIPTION</td> <td>NOT CIGOGGG</td> <td></td> <td></td> <td></td> <td></td> <td></td>	SIOH(5.5%) & DESIGN FEE(6%)	SISTEMATION (12 /g)	CONTINGENCY (15 %)	DIFFICULTY FACTOR	DIFFICIENT TV CANTOD	CLLY COST INDEX MULTIPLIER	ANTO ANOT MINEY MILL TIOL LED	OVERHEAD AND PROFIT	*	SUBTOTAL																																					רוטאותם הויוווק, רמומוווק, פוכ. וטו מפונטוונ	Descride Drilling Detabing of for Detroft	Provide Electrical Power, Wining, etc.	Builds I Dio o to I poor Vious VI	Rework Local Hot & Cold Piping	Install a 50 Gallon Storage Tank w/4 kW Coil			DESCRIPTION	NOT CIGOGGG					

27-Jun-96

Fuel Savings.

(Natural Gas)

The total yearly fuel savings associated with Option B of ECO-1 is \$285,510 or \$18,500 more than the base case.

Savings	Heating (mmBtu/day)	Fuel (mmBtu/day)	Natural Gas (mcf/yr)	Fuel Cost (\$/yr)
Totals	29,030	39,235	38,055	\$285,510
Percent Reduction	57.8%	59.7%	59.7%	59.7%

Electric Savings. The total yearly savings (cost) when compared to ECO-1 (Base Case) is \$2,991.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	(110)	(149,568)	(71,184)	(753)	(\$15,403)
Summer	24	(43,620)	(24,096)	(231)	(\$4,258)
Totals	(86)	(193,188)	(95,280)	(984)	(\$19,661)
Percent Reduction (Increase)	-18.6%	-121.1%	-157.4%	-131.0%	-108.3%

Operation/Maintenance

Savings.

The savings are reduced from the Base Case by \$20,000 increased costs to a total reduction of \$170,000 (\$190,000 - \$20,000).

Discussion.

Payback = 3.2 years

SIR = 5.0

The payback for the entire steam decentralization project including the decentralization of the DHW system itself is 3.2 years. Since it is worse than either ECO-1 (Base Case) and 1B, this ECO is not recommended. Maintaining the existing DHW distribution system appears to be the direction to maintain.

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#1E ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 1238000.

B. SIOH \$ 69000.

C. DESIGN COST \$ 75000.

D. TOTAL COST (1A+1B+1C) \$ 1382000. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 1382000. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL 98 -984. \$ -19660. 13.86 \$ -272492.
00 0. \$ 0. 16.99 \$ 0.
00 0. \$ 0. 17.38 \$ 0.
28 39235. \$ 285631. 17.14 \$ 4895712.
00 0. \$ 0. 13.56 \$ 0.
00 0. \$ 0. 15.12 \$ 0.
INGS \$ 0. 13.47 \$ 0.
38251. \$ 265971. \$ 4623220. A. ELECT \$ 19.98 B. DIST \$.00 C. RESID \$.00 D. NAT G \$ 7.28 E. COAL \$.00 F. LPG \$.00 M. DEMAND SAVINGS N. TOTAL 3. NON ENERGY SAVINGS (+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 170000. (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 2289900. B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)/
(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 2289900. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 435971. 5. SIMPLE PAYBACK PERIOD (1G/4) **3.17 YEARS** 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 6913120. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 5.00

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-2 OCCUPIED/UNOCCUPIED (5°F TEMPERATURE SETBACK MCA SYSTEM)

Existing.

Currently the spaces served by the MCA chilled and hot water distribution systems are generally kept at constant temperatures during both the heating and cooling seasons. Some air handlers have the capability to shutdown during un-occupied time periods, however, field surveys indicated that these controls were generally not utilized. The MCA DOE simulation was modeled to reflect constant zone set points at 72°F during the heating season and 75°F during the cooling season. The annual heating and cooling costs for the MCA systems as calculated in the DOE simulation are \$233,300. DOE simulation output can be found in Attachment 8.12

Component	Demand (kW)	On-Peak (kWh)	Off-Peak (kWh)	Energy (mmBtu)	Cost (\$)
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Hot Water Pump	120	18,691	33,228	177	\$4,400
Air Handlers	1,563	393,918	747,179	3,895	\$88,400
Totals	4,894	891,054	1,400,972	7,823	\$195,900

Electric Energy = 7,823 mmBtu/yr ((891,054 kWh +

1,400,972 kWh) x 3,413 Btu/kWh ÷

1,000,000 mmBtu/kWh)

Gas Usage = 4,979 mcf/yr

Gas Energy = $5,128 \text{ mmBtu/yr} (4,979 \text{ mcf/yr} \times 1.03)$

mmBtu/mcf)

DOE Simulation, MCA Chilled Water Plant, Existing

		Chiller		-	Tower Fan		Co	Condenser Pump	dm	Chill	Chilled Water Pump	dmn	Ą	Air Handlers	S
	Annual	On-Peak	On-Peak Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	On-Peak Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
anuary	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	64,089
February	0	0	0	0	0	0	0	0	0	0	0	0	130	29,700	57,835
farch	0	0	0	0	0	0	0	0	0	0	0	0	130	35,952	60,962
April	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	60,962
fay	369	23,982	19,785	41	5,108	8,502	27	3,499	089'9	91	9,638	21,339	130	32,827	64,089
nne	442	68,071	59,135	41	10,784	17,499	27	6,998	12,087	94	19,055	34,579	130	34,390	59,399
luly	422	66,972	75,300	41	9,870	20,090	27	6,361	13,359	94	17,459	36,150	130	31,263	65,652
August	441	76,939	63,923	41	11,339	18,287	27	7,316	12,405	94	20,086	34,499	130	35,952	60,962
September	365	51,299	48,917	41	10,016	17,281	27	6,680	12,405	91	18,054	37,094	130	32,827	60,962
October	271	13,966	13,958	41	3,966	8,225	27	2,863	089'9	88	8,126	22,386	130	31,263	65,652
November	0	0	0	0	0	0	0	0	0	0	0	0	130	31,263	62,526
December	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	64,089
Totals		2,310 301,229 281,018	281,018	246	51,083	89,884	162	33,717	63,616	493	92,417	186,048	1,563	393,918	747,179

Gas Cost = \$37,300 (4,979 mcf/yr x 7.50/mcf =

\$37,343, use \$37,300)

Total Energy = 12,951 mmBtu/yr (7,823 mmBtu/yr +

5,128 mmBtu/yr)

Total Cost = \$233,300 (\$196,000 + \$37,300)

Proposed.

Install time clocks and programmable thermostats for approximately 19 air handlers. The controls would be set to shutdown the systems for approximately 10 hours on a weekday and all day Saturday and Sunday. The thermostat would be set to override the fan based on a 5°F setback. The MCA DOE model was revised with the following parameters applied.

- 1. Begin setback at 7:00 pm
- 2. End setback at 5:00 am
- 3. Winter occupied temperature remains at 72°F
- 4. Winter unoccupied temperature set at 67°F
- 5. Summer occupied temperature set at 75°F
- 6. Summer unoccupied temperature set 80°F

The revised DOE model provided the following results:

Component	Demand (kW)	On-Peak (kWh)	Off-Peak (kWh)	Energy (mmBtu)	Cost (\$)
Chillers	2,310	314,618	249,900	1,927	\$59,700
Tower Fan	246	51,301	88,022	476	\$11,500
Condenser Pump	162	33,717	63,616	332	\$7,900
Chilled Water Pump	493	100,247	178,218	950	\$23,000
Hot Water Pump	120	18,691	26,489	154	\$4,000
Air Handlers	1,563	393,918	220,549	2,097	\$55,700
Totals	4,894	912,492	826,794	5,936	\$161,800

DOE Simulation, MCA Chilled Water Plant, Temperature Setback, 5°F in Heating/Cooling

		Chiller		•	Tower Fan		CO	Condenser Pump	du	Chill	Chilled Water Pump	, dmp	7	Air Handlers	8
	Annual	On-Peak	On-Peak Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
January	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	12,663
February	0	0	0	0	0	0	0	0	0	0	0	0	130	29,700	10,349
March	0	0	0	0	0	0	0	0	0	0	0	0	130	35,952	10,903
April	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	20,025
May	369	26,018	19,112	41	5,146	8,451	27	3,499	089'9	91	9,638	21,339	130	32,827	29,071
June	442	74,161	52,459	41	10,814	17,111	27	6,998	12,087	94	19,055	34,579	130	34,390	22,074
July	422	73,015		41	9,873	19,555	27	6,361	13,359	94	17,459	36,150	130	31,263	26,689
August	441	83,886	54,548	41	11,349	17,713	27	7,316	12,405	94	20,086	34,499	130	35,952	22,669
September	365	56,024	44,042	41	10,101	16,954	27	6,680	12,405	91	18,054	37,094	130	32,827	20,521
October	271	1,514	14,334	41	4,018	8,238	27	2,863	089'9	88	8,126	22,386	130	31,263	19,908
November	0	0	0	0	0	0	0	0	0	0	0	0	130	31,263	13,859
December	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	11,818
Totals		2,310 314,618 249,900	249,900	246	51,301	88,022	162	33,717	63,616	493	92,417	186,048	1,563	393,918	220,549

Electric Energy = 5,936 mmBtu/yr ((912,492 kWh/yr +

826,794 kWh/yr) x 3,413 Btu/kWh ÷

1,000,000 Btu/mmBtu)

Gas Usage = 4,374 mcf/yr

Gas Energy = $4,505 \text{ mmBtu/yr} (4,374 \text{ mcf/yr} \times 1.031)$

mmBtu/mcf)

Gas Cost = \$32,800 (4,374 mcf/yr x \$7.50/mcf)

Total Cost = \$194,600 (\$161,800 + \$32,800)

Construction Cost.

The expected construction cost is \$51,500.

(See Attached Cost Breakdown).

 Material
 \$ 21,900

 Labor
 \$ 24,300

 SIOH
 \$ 2,500

 Engineering
 \$ 2,800

 Total
 \$ 51,500

Savings.

The annual cost savings resulting from the implementation of this project will be \$38,700 (\$233,300 - \$194,600).

Component	Demand (kW)	On-Peak (kWh)	Off-Peak (kWh)	Energy (mmBtu)	Cost (\$)
Totals	0	(21,438)	574,178	1,887	\$34,200
Percent Reduction	0.0%	-2.4%	64.4%	24.1%	17.4%

Gas Usage = 605 mcf/yr (4,979 mcf/yr - 4,374 mcf/yr)

Gas Energy = 623 mmBtu/yr (5,128 mmBtu/r - 4,505 mmBtu/yr)

Gas Cost = \$4,500 (\$37,300 - \$32,800)

Entech Engineering, Inc.

Total Savings = \$38,700 (\$34,200 + \$4,500)

Maintenance

Savings:

There is no additional monetary savings due to reduced

maintenance.

Discussion.

Payback = 1.3 years

SIR = 10.7

The expected payback resulting from the implementation of this project is 1.3 years. This ECO is recommended for implementation. The controlled MCA system(s) setback scenario described here will have significant savings. The feasibility of utilizing the existing clocks on the MCA units will have to be performed during the design phase of this project.

Other areas (units) that are not strictly MCA 2-pipe systems may be able to incorporate this type of control. Speculation on those areas and units was not made with this study because of the uncertainty of the application. Additional savings maybe realized if such units can be adapted with these controls.

FORT MONMOUTH PROJECT COST ESTIMATE 5°F Temperature Setback MCA Systems

NO.	DESCRIPTION	QTY	UNIT	MATER	DIAI	LAB	OP	TOTAL BARE
NU.	DESCRIPTION	QIT	ONII	\$/UNIT	COST	\$/UNIT	COST	COST
1	Electronic Time Clocks	19	Each	\$300.00	\$5,700	\$150.00	\$2,850	\$8,550
	Programmable Thermostats	19	Each	\$150.00	\$2,850	\$100.00	\$1,900	\$4,750
3	Electric, Wiring, Switches	19	Each	\$500.00	\$9,500	\$500.00	\$9,500	\$19,000
4					\$0		\$0	\$0
5					\$0		\$0	\$0
6					\$0		\$0	\$0 \$0
7		<u> </u>			\$0		\$0	\$0
<u>8</u> 9	1				\$0 \$0		\$0 \$0	\$0
10					\$0		\$0	\$0
11		1			\$0		\$0	\$0 \$0 \$0 \$0 \$0 \$0
12		1			\$0		\$0	\$0
13					\$0		\$0	\$0
14					\$0		\$0	\$0
15					\$0		\$0	\$0
16					\$0		\$0	\$0
17					\$0 \$0		\$0 \$0	\$U
18 19					\$0 \$0		\$0	\$0 \$0
20		 			\$0		\$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0
21					\$0		\$0	\$0
22					\$0		\$0	\$0
23					\$0		\$0	\$0
24					\$0		\$0	\$0 \$0 \$0
25					\$0		\$0	\$0
26 27		1			\$0 \$0		\$0 \$0	\$U
28		1			\$0		\$0	\$0
29					\$0		\$0	\$0 \$0 \$0 \$0
30		1			\$0		\$0	\$0
31					\$0		\$0	\$0 \$0 \$0
32					\$0		\$0	\$0
33					\$0		\$0	\$0
34					\$0 \$0		\$0 \$0	\$0
35 36					\$0		\$0	\$0 \$0 \$0
37		1			\$0		\$0	\$0
38					\$0		\$0	\$0 \$0
39					\$0		\$0	\$0
40					\$0		\$0	\$0 \$0 \$0 \$0 \$0
41					\$0		\$0	\$0
42 43					\$0 \$0		\$0 \$0	\$0
44		-			\$0		\$0	\$0
45		+			\$0	-	\$0	\$0
46		1			\$0		\$0	\$0
47					\$0		\$0	\$0
48					\$0		\$0	\$0
49					\$0		\$0	\$0
50 51					\$0 \$0		\$0 \$0	\$0 \$0
52					\$0 \$0		\$0 \$0	\$0 \$0
53		+ -			\$0		\$0	\$0
54		-			\$0		\$0	\$0 \$0 \$0 \$0
55					\$0		\$0	\$0
_56					\$0		\$0	\$0
57					\$0		\$0	\$0 \$0
58		1			\$0		\$0 \$0	\$0
59 60		-			\$0 \$0		\$0 \$0	\$0 \$0
61					\$0		\$0	\$0
62		+	-	-	\$0		\$0	\$0
63		1			\$0	1	\$0	\$0
	SUBTOTAL		-					\$32,300
	OVERHEAD AND PROFIT				\$1,800		\$7,800	\$9,600
	CITY COST INDEX MULTIPLIER							
	DIFFICULTY FACTOR							
	CONTINGENCY	_			\$2,000		\$2,200	\$4,200
	SIOH(5.5%) & DESIGN FEE(6%) BASE TOTAL COST			\$2,500	\$21,850	\$2,800	\$24,250	\$5,300 \$51,400

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#2 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 46200. 2500. B. SIOH \$ 2500. C. DESIGN COST \$ 2800. D. TOTAL COST (1A+1B+1C) \$ 51500. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 51500. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) A. ELECT \$ 18.12 1887. \$ 34192.
B. DIST \$.00 0. \$ 0.
C. RESID \$.00 0. \$ 0.
D. NAT G \$ 7.28 623. \$ 4535.
E. COAL \$.00 0. \$ 0.
F. LPG \$.00 0. \$ 0.
M. DEMAND SAVINGS \$ 0.
N. TOTAL 2510. \$ 38728. 473907. 13.86 16.99 17.38 \$ 0. 17.14 \$ 77737. 13.56 \$ 0. 16.99 0. 13.56 \$ 15.12 \$ 15.12 13.47 0. \$ 0. \$ 551645. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 0. (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) 0. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) DISCOUNTED SAVINGS(+)/ COST(-)(4) ITEM \$ 0. d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 1.33 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 551645. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) =10.71

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-3 REDUCE BUILDING INFILTRATION

Existing.

Currently Building 2700 is under a negative pressure. Section 5.4.3 established that an estimated 25,000 cfm of outside air is drawn into the building by exhaust fans. This outside air is over and above the 65,000 cfm brought into the building by existing supply fans, totaling 90,000 cfm. This is partly due to the installation of exhaust side equipment without modifications to the supply side. Most of the exhaust fans operate continuously all year. The existing DOE models for both the MCA systems and miscellaneous cooling/heating systems were modeled to reflect this condition. As stated in Section 5, infiltration factors were applied to spaces not receiving outside air from other sources. An infiltration factor of 0.8 air changes per hour was applied. Based on the DOE models, the annual estimated energy cost for the direct heating and cooling (excluding losses) at Building 2700 is \$671,200. Individual components are summarized below and shown in detail on the attached table titled "Existing Operation".

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Miscellaneous Cooling	8,632	1,924,765	2,947,124	16,628	\$406,900
Totals	11,843	2,403,210	3,567,689	20,379	\$510,000

Electric Energy = 20,379 mmBtu/yr ((2,403,210 kWh/yr + 3,567,689 kWh/yr) x 3,413 Btu/kWh ÷ 1,000,000 Btu/mmBtu)

Gas Usage = 21,495 mcf/yr

DOE Simulation, MCA Chilled Water Plant, Existing

Chiller			Tower Fan		Col	Condenser Pump	du	Chill	Chilled Water Pump	dun	1	Air Handlers	S
On-Peak Off-Peak	쑱	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
kWh		kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
0	L_	0	0	0	0	0	0	0	0	0	130	32,827	64,089
0		0	0	0	0	0	0	0	0	0	130	29,700	57,835
0		0	0	0	0	0	0	0	0	0	130	35,952	60,962
0		0	0	0	0	0	0	0	0	0	130	32,827	60,962
19,785		41	5,108	8,502	27	3,499	089'9	91	9,638	21,339	130	32,827	64,089
59,135		41	10,784	17,499	27	6,998	12,087	9	19,055	34,579	130	34,390	59,399
75,300		41	9,870	20,090	27	6,361	13,359	94	17,459	36,150	130	31,263	65,652
63,923		41	11,339	18,287	27	7,316	12,405	94	20,086		130	35,952	60,962
48,917		41	10,016	17,281	27	6,680	12,405	91	18,054	37,094	130	32,827	60,962
13,958		41	3,966	8,225	27	2,863	089'9	88	8,126	22,386	130	31,263	65,652
0		0	0	0	0	0	0	0	0	0	130	31,263	62,526
0		0	0	0	0	0	0	0	0	0	130	32,827	64,089
2,310 301,229 281,018		246	51,083	89,884	162	33,717	63,616	493	92,417	186,048	1,563	393,918	747,179

DOE Simulation, Miscellaneous Cooling Systems Existing

		Compressors	
	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh
January	625	147,207	215,701
February	629	134,580	197,257
March	661	166,081	226,298
April	706	157,177	240,597
May	763	159,263	263,408
June	822	182,764	257,414
July	789	169,327	291,007
August	812	195,302	267,450
September	755	167,237	258,514
October	706	150,853	264,296
November	718	146,315	239,287
December	646	148,658	225,894
Totals	8,632	1,924,765	2,947,124
Electric Model	11,300	1,769,657	2,471,473
% Variance	24%	-9%	-19%

Season	Demand	On-Peak kWh	Off-Peak kWh
Summer	3,178	714,631	1,074,385
Non-Summer	5,454	1,210,134	1,872,739

Season	Cost
Summer	\$151,700
Non-Summer	\$255,200

Gas Energy = $22,140 \text{ mmBtu/yr} (21,495 \text{ mcf/yr} \times 1.031)$

mmBtu/mcf)

Gas Cost = \$161,200 (21,495 mcf/yr x \$7.50/mcf =

\$161,213, use \$161,200)

Total Energy = 42,519 mmBtu/yr (20,379 mmBtu/yr +

22,140 mmBtu/yr)

Total Cost = \$671,200 (\$510,000 + \$161,200)

Proposed.

Reduce exhaust loads to a level comparable to the supply side. Due to the complexity of the existing systems it is highly unlikely that exhaust loads can be reduced to such a level. Rather it is within reason to estimate that approximately 25% of the additional exhaust load can be removed. This can be accomplished by disconnecting/shutting down fans which are no longer needed or replacing oversized fans with smaller ones. DOE simulation models were adjusted to reflect a 25% decrease in the amount of infiltration experienced. All spaces attributed with an air change factor of 0.8 were changed to 0.6. The above change lowered annual heating and cooling costs to \$661,500 as shown in the following table.

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	300,300	282,521	1,989	\$60,700
Tower Fan	246	51,160	89,957	482	\$11,600
Condenser Pump	162	33,717	63,616	332	\$7,900
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Miscellaneous Cooling	8,632	1,924,765	2,947,124	16,628	\$406,900
Totals	11,843	2,402,359	3,569,266	20,381	\$510,000

DOE Simulation, MCA Chilled Water Plant, Reduced Infiltration

		Chiller		-	Tower Fan		Col	Condenser Pump	du	Chill	Chilled Water Pump	dun	Ą	Air Handlers	S
	Annual	On-Peak	On-Peak Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
January	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	64,089
February	0	0	0	0	0	0	0	0	0	0	0	0	130	29,700	57,835
March	0	0	0	0	0	0	0	0	0	0	0	0	130	35,952	60,962
April	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	60,962
May	361	24,436	20,354	41	5,134	8,528	27	3,499	089'9	91	9,638	21,339	130	32,827	64,089
June	428	67,471		41	10,787	17,512	27	6,998	12,087	94	19,055	34,579	130	34,390	59,399
July	410	Ŭ	74,957	41	9,870	20,081	27	6,361	13,359	94	17,459	36,150	130	31,263	65,652
August	426		63,852	41	11,339	18,285	27	7,316	12,405	94	20,086	34,499	130	35,952	60,962
September	356	51,429	49,593	41	10,034	17,307	27	6,680	12,405	91	18,054	37,094	130	32,827	60,962
October	271	14,441	14,447	41	3,996	8,244	27	2,863	089'9	88	8,126	22,386	130	31,263	65,652
November	0	0	0	0	0	0	0	0	0	0	0	0	130	31,263	62,526
December	0	0	0	0	0	0	0	0	0	0	0	0	130	32,827	64,089
Totals		2,252 300,300 282,521	282,521	246	51,160	89,957	162	33,717	63,616	493	92,417	186,048	1,563	393,918	747,179

DOE Simulation, Miscellaneous Cooling Systems Reduced Infiltration

	Compressors						
	Annual	On-Peak	Off-Peak				
Month	kW	kWh	kWh				
January	625	147,207	215,701				
February	629	134,580	197,257				
March	661	166,081	226,298				
April	706	157,177	240,597				
May	763	159,263	263,408				
June	822	182,764	257,414				
July	789	169,327	291,007				
August	812	195,302	267,450				
September	755	167,237	258,514				
October	706	150,853	264,296				
November	718	146,315	239,287				
December	646	148,658	225,894				
Totals	8,632	1,924,765	2,947,124				
Electric Model	11,300	1,769,657	2,471,473				
% Variance	24%	-9%	-19%				

Season	Demand	On-Peak kWh	Off-Peak kWh
Summer	3,178	714,631	1,074,385
Non-Summer	5,454	1,210,134	1,872,739

Season	Cost
Summer	\$151,700
Non-Summer	\$255,200

Electric Energy = 20,381 mmBtu/yr ((2,402,359 kWh/yr +

3,569,266 kWh/yr) x $3,413 \text{ Btu/kWh} \div$

1,000,000 Btu/mmBtu)

Gas Usage = 20,205 mcf/yr

Gas Energy = $20,811 \text{ mmBtu/yr} (20,205 \text{ mcf/yr} \times 1.03)$

mmBtu/mcf)

Gas Cost = \$151,500 (20,205 mcf/yr x \$7.50/mcf =

\$151,538, use \$151,500)

Total Energy = 41,192 mmBtu/yr (20,381 mmBtu/yr +

20,811 mmBtu/yr)

Total Cost = \$661,500 (\$510,000 + \$151,500)

Construction Cost.

Estimating the costs associated with realizing these changes are difficult to predict without performing a detailed design analysis. In order to qualify for ECIP funding, this ECO would need to be at a 9.9 year payback period. In order to achieve this, the construction cost associated with obtaining a 9.9 year payback period is \$96,000.

Material	\$	43,000
Labor	\$	43,000
SIOH	\$	4,700
Engineering	\$_	5,300
Total	\$	96 000

Savings.

The annual cost savings resulting from the implementation of this project will be \$9,700 (\$671,200 - \$661,500). These savings in dollars were for the most part realized by the fuel (natural gas) savings only.

Demand kW = 0 kW/yr (11,843 kW/yr - 11,843 kW/yr)

On-Peak kWh = 851 kWh/yr (2,403,210 kWh/yr -

2,402,359 kWh/yr)

Off-Peak kWh = -1,577 kWh/yr (3,567,689 kWh/yr -

3,569,266 kWh/yr)

Gas Usage = 1,290 mcf/yr (21,495 mcf/yr - 20,205)

mcf/yr)

Energy Usage = 1,326 mmBtu [(851 kWh/y - 1,577)]

kWh/yr) x 3,413 Btu/kWh) + (1,290

 $mcf/yr \times 1,031,000 Btu/mcf) \div 1,000,000$

Btu/mmBtu]

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmbtu	Cost \$/yr
Chillers	0	929	(1,503)	(2)	\$0
Tower Fan	0	(77)	(73)	(1)	\$0
Condenser Pump	0	(1)	(1)	0	\$0
Chilled Water Pump	0	0	0	0	\$0
Miscellaneous Cooling	0	0	0	0	\$0
Totals	0	851	(1,577)	(2)	\$0

Maintenance

Savings.

There is no additional monetary savings due to reduced

maintenance.

Discussion.

Payback = 9.9 years

SIR = 1.7

The payback for this model is 9.9 years. Survey work is required to resolve issues surrounding exhaust minimization in this building. Efforts to reduce the negative pressure will result in cost savings.

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#3 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 86000.

B. SIOH \$ 4700.

C. DESIGN COST \$ 5300.

D. TOTAL COST (1A+1B+1C) \$ 96000. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ G. TOTAL INVESTMENT (1D - 1E - 1F) 96000. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL A. ELECT \$.00 0. \$ 0. 13.86 \$ B. DIST \$.00 0. \$ 0. 16.99 \$ C. RESID \$.00 0. \$ 0. 17.38 \$ D. NAT G \$ 7.28 1329. \$ 9675. 17.14 \$ E. COAL \$.00 0. \$ 0. 13.56 \$ F. LPG \$.00 0. \$ 0. 15.12 \$ M. DEMAND SAVINGS \$ 0. 13.47 \$ N. TOTAL 1329. \$ 9675. \$ 0. \$ 0. \$ 165832. \$ 0. 0. 0. 165832. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 13.47 0. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+),

(1) (2) (3) COST(-)(4) ITEM SAVINGS(+)/ d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 5. SIMPLE PAYBACK PERIOD (1G/4) 9.92 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 165832. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 1.73

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-4 REPLACE EXISTING CENTRAL CHILLER(S)

Existing.

Presently, the MCA-CHW system is supported by two 690 ton centrifugal chillers installed in Building 2706. They are operated from May 15 to October 15, alternating from month to month during that period. The chillers were installed as part of the Major Construction Activities (MCA) project in 1982.

These units were rated at 0.78 kW/ton at the time of the installation. The electric model simulates one unit with a connected kW of 538, operating the entire period. The units' estimated yearly demand and usage totals were calculated to be 1,937 kW and 1,011,440 kWh respectively.

The yearly (7-month) costs to operate one chiller is estimated to be \$85,082.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	323	64,560	86,080	514	\$12,941
Summer	1,614	516,480	344,320	2,938	\$72,141
Totals	1,937	581,040	430,400	3,452	\$85,082

Proposed.

The proposed change is to replace one of the chillers with a newer more efficient chiller of the same capacity. The typical kW/ton rating for present day chillers of this size is around 0.5 to 0.55. Entech will use 0.55 kW/ton which equates to a connected load of 380 kW.

Re-calculating the electric model using the linear difference between units operation rating yields demand and usage total of 1,367 kW and 713,460 kWh. The cost are expected to be reduced to about \$60,016/yr.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu)	Cost (\$/yr)
Non-Summer	228	45,540	60,720	363	\$9,128
Summer	1,139	364,320	242,880	2,072	\$50,888
Totals	1,367	409,860	303,600	2,435	\$60,016

Construction Cost.

The estimated costs for replacing one of the two chillers in Building 2706 is \$288,900.

Material	\$195,800
Labor	63,100
SIOH	14,000
Engineering	<u>16,000</u>
Total	\$288,900

Savings.

The total yearly savings associated with this ECO is \$25,066.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu)	Cost (\$/yr)
Non-Summer	95	19,020	25,360	151	\$3,813
Summer	475	152,320	101,440	866	\$21,253
Totals	570	171,340	126,800	1,017	\$25,066
Percent Reduction	29.5%	29.5%	29.5%	29.5%	29.5%

Maintenance Savings.

There are no significant maintenance savings associated with this ECO.

Discussion.

Payback = 11.5 years

SIR = 1.20

These are the results of the ECOs Life Cycle Analysis and a copy of it can be found attached.

This ECO is not recommended. If the chiller experienced significant year round loads, then the results might have been more attractive.

FORT MONMOUTH PROJECT COST ESTIMATE REPLACE MCA CHILLER (EC0-4)

NO.	DESCRIPTION	QTY	UNIT	MATERIAL		LABOR		TOTAL BARE
				\$/UNIT	COST	\$/UNIT	COST	COST
1	Remove existing chiller	1	Each	\$5,000.00	\$5,000	\$10,000.00	\$10,000	\$15,00
2	Install replacement chiller	1	Each	\$151,800.00	\$151,800	\$20,000.00	\$20,000	\$171,80
3	Piping, foundation, etc. rework	1	Lot	\$2,000.00	\$2,000	\$5,000.00	\$5,000	\$7,00
4	Electrical wiring, connections, etc.	1	Lot	\$3,000.00	\$3,000	\$2,000.00	\$2,000	\$5,00
5					\$0		\$0	\$
6					\$0		\$0	\$
7					\$0		\$0	\$
8					\$0		\$0	\$
9					\$0		\$0	\$
10					\$0		\$0	\$
11					\$0		\$0	\$
12					\$0		\$0	\$
13					\$0		\$0	
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47					\$0		\$0	\$(
48					\$0		\$0	\$(
49					\$0		\$0	\$(
50					\$0		\$0	\$
51					\$0		\$0	\$(
	SUBTOTAL	i i				1		\$198,80
	OVERHEAD AND PROFIT				\$16,200		\$20,400	\$36,60
	CITY COST INDEX MULTIPLIER	 			Ţ.5, 2 5		320,.00	455,00
	DIFFICULTY FACTOR	 						
	CONTINGENCY				\$17,800		\$5,700	\$23,500
	SIOH(5.5%) & DESIGN FEE(6%)	 		14,000	Ψ17,000	16,000	Ψ3,100	\$30,000
	BASE TOTAL COST	 		17,000	\$195,800	10,000	\$63,100	\$288,90

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28-Jun-96

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#4 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 259000.

B. SIOH \$ 14000.

C. DESIGN COST \$ 16000.

D. TOTAL COST (1A+1B+1C) \$ 289000. 0. 0. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$
G. TOTAL INVESTMENT (1D - 1E - 1F) 289000. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) ात्राप्त 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 0. (1) DISCOUNT FACTOR (TABLE A) 13.47 Ο. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 0. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 25063. 5. SIMPLE PAYBACK PERIOD (1G/4) 11.53 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 347375. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 1.20

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-5 CONVERT SPECIFIC AIR COOLED CHILLERS TO WATER COOLED CHILLERS

Existing.

Building 2700 utilized a variety of cooling equipment. Included in that equipment are five (5) air cooled water chillers excluding the large chiller supporting the three cleanrooms on the fourth floor.

The existing electric costs for these five (5) are estimated to be near \$49,100. Refer to Table ECO-5-E for the existing analysis.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	812	110,377	186,937	1,015	\$27,161
Summer	620	99,132	138,522	811	\$21,952
Totals	1,432	209,509	325,459	1,826	\$49,113

Proposed.

To replace the existing air cooled chillers with water cooled chillers with better kW/ton efficiency utilizing the existing cooling towers on the roof.

Water cooled versus air cooled in the size range (20-100 tons) being evaluated will reduce the overall energy consumption of each by about 15%. Applying that figure directly to the connected kW will yield the savings expected. For simplification we will assume the new loads on the towers can be accommodated and that the new loads/flows will not effect the tower energy.

The electric costs associated with operating these five (5) systems with water cooled chillers is estimated to be near \$41,750. Refer to table ECO-5-P for the proposed analysis.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	690	93,821	158,897	863	\$23,087
Summer	527	84,263	117,744	689	\$18,659
Totals	1,217	178,084	276,641	1,552	\$41,746

Construction

Cost.

The construction costs to implement this ECO are estimated to be near \$278,500. Refer to the estimate attached.

Material	\$154,900
Labor	94,600
SIOH	14,000
Engineering	<u>15,000</u>
Total	\$278,500

Savings.

The electric energy cost savings associated with implementing this ECO is approximately \$7,370.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	122	16,556	28,040	152	\$4,074
Summer	93	14,869	20,778	122	\$3,293
Totals	215	31,425	48,818	274	\$7,367
Percent Reduction	15.0%	15.0%	15.0%	15.0%	15.0%

Maintenance

Savings.

There are no significant maintenance savings associated with this ECO.

Discussion.

Payback = 37.8 years

SIR

0.4

This ECO is not recommended because the savings do not justify the cost for equipment replacement.

FT. N BUILDING 2700 ELECTRIC MODEL - C(

			HVAC Airside Equipment - General Info	rmation	Cooling Equipment	Total	Winter In
HVAC	Design/Site	Equip.	Field	A.ea	Field	Connected	Demand I
Item	Designation	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month k
89		AHU	McQuay LSL(Auditonum M-Area)	Auditonum	McQuay AHR(Common - out on grade)	27 0	
90	L:l	AHU	McQuay LSL(Auditonum M-Area)		McQuay AHR(Common - out on grade)	27 0	6.8
107		AHU	unknown(2D310 Cleanroom)		Pack Camer Air Cooled Chiller on roof	22 4	11.2
131		(2)AHU	York(MR - 33 East 3C/D200 Area)		York Comp in MR-33 & condenser on ro		14 1
135		AHU	Climatrol(MR-34 South 3C/D300 Area)		Climatrol Chiller in MR34 & cond on roo		36 8
				TOTALS		207	76

FT. N BUILDING 2700 ELECTRIC MODEL - CC

			HVAC Airside Equipment - General Infor	mation	Cooling Equipment	Total	Winter Int
HVAC	Design/Site	Equip.	Field	Area	Field	Connected	Demand D
Item	Designation	Туре	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month kV.
89	l	AHU	McQuay LSL(Auditonum M-Area)	:Auditonum	McQuay AHR(Common - out on grade)	23 0	5.7
90		AHU	McQuay LSL(Auditonum M-Area)	Auditonum	McQuay AHR(Common - out on grade)	23.0	5 7
107		AHU	iunknown(2D310 Cleanroom)	2D310 Cleanroom	Pack. Camer Air Cooled Chiller on roof	19.1	9.5
131		(2)AHU	York(MR - 33 East 3C/D200 Area)	3D306-3C321 lab area	York Comp in MR-33 & condenser on ro	47.9	12 0
135		AHU	(Climatrol(MR-34 South 3C/D300 Area)		Climatrol Chiller in MR34 & cond on roo		313
L	LL			TOTALS		176	64

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - CONVERT SPECIFIC AIR COOLED CHILLERS TO WATER COOLED CHILLE

TABLE ECO-5-E

							W	inter Billir	ig Month	15	Inter	mediate E	Billing !	Months		ummer B	illing Mo	inths	1
at inform	ation	Cooling Equipment	Total	Winter	intermed.	Summer	Off-	Peak	On-P	eak	Off	Peak	On	-Peak	Of	-Peak	On	-Peak	\Box
_	Area	Field	Connected	Demand	Demand	Demand	hrs/		hrs/		hrs/		hrs/		hrs/		hrs/		Dem
<u> </u>	Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day k	:Wh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	kW/
		McQuay AHR(Common - out on grade)	27 0	6.6	13 5	20 3	2	1,621	4	2.162	3	2,432	6	3.243	-	3.243	8	4,324	$\overline{}$
	Auditonum	McQuay AHR(Common - out on grade)	27 0	6.8	13 5	20 3	2	1,621	4	2.162	3	2,432	6	3,243		3,243	8	4,324	
	2D310 Cleanroom	Pack Carner Air Cooled Chiller on roof	22 4	11 2	16.8	16 8	2	1,347	6	2,693	3	2.020	8	3,591	4	2,693	10	4,489	
	3D306-3C321 lab area	York Comp in MR-33 & condenser on ro	56 4	14 1	28 2	42 3	1	1,692	4	4,513	2	3,385	4	4,513		6,769	6	6,769	1-
(rea)	3D330 Cleanroom	Cimatrol Chiller in MR34 & cond on roo	73 6	36 8	55 2	55 2	2	4 4 1 8	6	8,835	3	6.626	8	11.780		8 835	10	14,725	1
	TOTALS		207	76	127	155	9	10,699	24	20,365	14	16,895	32	26,370	20	24,783	42	34,631	

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - CONVERT SPECIFIC AIR COOLED CHILLERS TO WATER COOLED CHILLE

TABLE ECO-5-P

							V	Vinter Billir	ig Mon	ths	Inter	mediate E	Billing I	Months	S	ummer B	illing Mo	nths	1
al Inform	ation	Cooling Equipment	Total	Winter	intermed.	Summer	Off	-Peak	On-	Peak	Off-	Peak	On	Peak	Off-	Peak	On	-Peak	T
	Area	Field	Connected	Demand	Demand	Demand	hrs/	i	hrs/		hrs/	1	hrs/		hrs/		hrs/		Den
1	Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	'kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	ɗay	kWh/Mo	kW
	Auditonum	McQuay AHR(Common - out on grade)	23 0	5 /	11.5	17.2	2	1,378	4	1,838	3	2,067	6	2.756	4	2.756	8	3,675	5
	Auditonum	McQuay AHR(Common - out on grade)	23 0	5.7	11.5	17.2	2	1,378	4	1,838	3	2,067	6	2,756	4	2,756	8	3,675	5
	2D310 Cleanroom	Pack Camer Air Cooled Chiller on roof	19 1	9.5	14.3	14 3	2	1,145	6	2,289	3	1,717	8	3,052	4	2.289	10	3.815	5
	3D306-3C321 lab area	York Comp in MR-33 & condenser on ro	47.9	12 0	24 0	36 0	1	1,438	4	3,836	2	2,877	- 4	3,836	4	5.754	- 6	5.754	4
rea)	3D330 Cleanroom	Climatrol Chiller in MR34 & cond on roo	62 6	313	46 9	46 9	_ 2	3 755	6	7,510	3	5,632	8	10 013	4	7,510	10	12,516	5
	TOTALS		176	64	108	132	. 9	9,094	24	17,310	14	14,361	32	22,414	20	21,066	42	29,436	5

RTMENT OF THE ARMY

: AIR COOLED CHILLERS TO WATER COOLED CHILLERS

ECO-5-E

3/1	ing Mor	ths	Inter	mediate B	lilling M	onths	S	ummer Bi	ling Mo	nths										
_	On	Peak	Off-	Peak	On-	Peak	Off-	Peak	On	-Peak	i	Non-5	ummer			Sum	mer		Annual	1
	hrs/		hrs/	1	hrs/		hrs/		hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	1
Мо		kWh/Mo	dav	kWh/Mo	day	kWh/Mo	day	kWh/Mo-	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	kW/Yr.	KWH/Yr.	KWH/Yr.	\$	\$	No.
21	4	2,162	3	2.432	6	3,243	4	3.243	8	4,324	81	16,214	21,619	\$3,250	81	12,972	17.295	\$2.812	\$6,062	89
21	4	2,162	3	2,432	6	3,243	4	3,243	8	4,324	81	16,214	21,619	\$3,250	81	12,972	17.295	\$2,812	\$6,062	90
47	6	2.693	3	2.020	8	3,591	4	2.693	10	4,489	112	13,466	25,13 7	\$3.592	67	10,773	17.955	\$2,596	\$6,188	
92	4	4,513	2	3,385	4	4,513	4	6.769	6	6,769	169	20,307	36,102	\$5,286	169	27,076	27.076	\$5.216	\$10,502	131
18	- 6	8.835	3	6,626	8	11.780		8,835	10	14,725	368	44 175	82 460	\$11 783	271	35,340	58 900	\$8.515	\$20,298	135
99	24	20,365	14	16,895	32	26,370		24,783	42	34,631	812	110,377	186,937	\$27,161	620	99,132	138,522	\$21,952	\$49,112	

RTMENT OF THE ARMY

AIR COOLED CHILLERS TO WATER COOLED CHILLERS

ECO-5-P

3:110	ng Mo	nths	Inte	rmediate	Billing N	lonths	S	ımmer Bi	lling Mo	nths	l									
	On	Pesk	ÖĦ	-Peak	On-	Peak	04-	Peak	On	-Peak		Non-S	ummer			Sum	mer		Annual	
	hrs/		hrs/	7	hrs/		hrs/	i	hrs/		Demand !	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	i
Мo	dav	-kWh/Mo	day	IkWh/Mo	day	kWh/Mo	day 1	kWh/Mo:	day	kWh/Mo	kW/Yr !	KWH/Yr.	KWH/Yr	\$	kW/Yr	KWH/Yr.	KWH/Yr	_\$	<u> </u>	No.
76	- 4	1,838	- 3	2,067	6	2,756	4.	2.756	8	3,675	69	13,782	18,376	\$2,763	69	11,026	14,701	\$2,390	\$5 ,153	89
78		1,838		2.067		2.756	4	2,756	8	3,675	69	13,782	18,376	\$2,763	69	11,026	14,701	\$2,390	\$5,153	90
45	E	2.289	- 3	1.717	8	3.052	4	2,289	10	3,815	95	11,446	21,366	\$3,053	57	9,157	15.262	\$2,206	\$5,259	107
38		3,836	2	2.877	4	3,836	4	5.754	6	5,754	144	17,261	30,687	\$4,493	144	23,015	23,015	\$4,434	\$8,927	131
55	-	7,510		5.632	8	10.013	4	7,510	10	12,516	313	37,549	70,091	\$10,015	188	30,039	50,065	\$7,238	\$17,253	135
94	24	17,310	14		32	22,414	20	21,066	42	29,436	690	93,821	158,897	\$23,087	527	84,263	117,744	\$18,659	\$41,745	

FORT MONMOUTH

PROJECT COST ESTIMATE COVERT SPECIFIC AIR COOLED CHILLERS WITH WATER COOLED CHILLERS (EC0-5)

NO.	DESCRIPTION	QTY	UNIT	MATE		LAB	OR	TOTAL BARE
				\$/UNIT	COST	\$/UNIT	COST	COST
1	Remove existing Air Cooled Chiller	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
	Install Water Cooled Chiller (#89)	1	Each	\$15,000.00	\$15,000	\$4,000.00	\$4,000	\$19,00
3	Piping, foundation, etc. rework	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
4	Electrical wiring, connections, etc.	1	Each	\$1,000.00	\$1,000	\$2,000.00	\$2,000	\$3,00
5					\$0		\$0	\$
6	Remove existing Air Cooled Chiller	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
7	Install Water Cooled Chiller (#90)	1	Each	\$15,000.00	\$15,000	\$4,000.00	\$4,000	\$19,00
8	Piping, foundation, etc. rework	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
	Electrical wiring, connections, etc.	1	Each	\$1,000.00	\$1,000	\$2,000.00	\$2,000	\$3,00
10					\$0		\$0	\$(
11	Remove existing Air Cooled Chiller	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
	Install Water Cooled Chiller (#107)	1	Each	\$12,000.00	\$12,000	\$3,500.00	\$3,500	\$15,50
	Piping, foundation, etc. rework	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
	Electrical wiring, connections, etc.	1	Each	\$1,000.00	\$1,000	\$2,000.00	\$2,000	\$3,00
15					\$0	V 2,000.00	\$0	\$(
	Remove existing Air Cooled Chiller	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,00
	Install Water Cooled Chiller (#131)	1	Each	\$25,000.00	\$25,000	\$5,000.00	\$5,000	\$30,00
	Piping, foundation, etc. rework	i	Each	\$2,000.00	\$2,000	\$3,000.00	\$3,000	\$5.00
	Electrical wiring, connections, etc.	1	Each	\$1,500.00	\$1,500	\$2,500.00	\$2,500	\$4,000
20		· · · · · · · · · · · · · · · · · · ·		\$1,000.00	\$0	\$2,000.00	\$0	\$(
	Remove existing Air Cooled Chiller	1	Each	\$2,000.00	\$2,000	\$2,000.00	\$2,000	\$4,000
	Install Water Cooled Chiller (#135)	1	Each	\$35,000.00	\$35,000	\$6,000.00	\$6,000	\$41,000
	Piping, foundation, etc. rework	1	Each	\$2,000.00	\$2,000	\$3,000.00	\$3,000	\$5,000
	Electrical wiring, connections, etc.	1	Each	\$1,500.00	\$1,500	\$2,500.00	\$2,500	\$4,000
25	Electrical Willing, conflictions, etc.	•	Laci	Ψ1,000.00	\$0	Ψ2,300.00	\$0	\$1,000
26					\$0		\$0	\$(
27					\$0		\$0	\$(
28					\$0		\$0	\$(
29					\$0		\$0	\$(
30					\$0		\$0	\$(
31					\$0		\$0	\$(
32					\$0		\$0	\$(
33					\$0		\$0	\$(
34					\$0		\$0	\$(
35	·····				\$0		\$0	\$(
36					\$0		\$0	\$(
37					\$0		\$0	\$(
38					\$0		\$0	\$(
39					\$0		\$0	\$(
40				-	\$0		\$0	\$(
41					\$0		\$0	\$(
42					\$0		\$0	\$(
43					\$0		\$0	\$(
44					\$0		\$0	\$(
45					\$0		\$0	\$(
46					\$0		\$0	\$(
47					\$0		\$0	\$(
48					\$0		\$0	\$(
49					\$0		\$0	\$(
50					\$0		\$0	\$(
51					\$0		\$0	\$(
	SUBTOTAL				- 30		40	\$183,500
	OVERHEAD AND PROFIT				\$12,800		\$30,500	\$43,300
	CITY COST INDEX MULTIPLIER				φ12,0UU		\$30,300	φ+ 3,300
	DIFFICULTY FACTOR							
					644400		60 600	#00 TO
	CONTINGENCY			44.000	\$14,100	45.000	\$8,600	\$22,700
	SIOH(5.5%) & DESIGN FEE(6%) BASE TOTAL COST			14,000	\$154,900	15,000	\$94,600	\$29,000 \$278,50 0

G:\4130.05\SS\ECOS\ECO-5CE.WK4

28-Jun-96

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
ALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 INSTALLATION & LOCATION: PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#5 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 249500. B. SIOH \$ 14000. C. DESIGN COST \$ 15000. D. TOTAL COST (1A+1B+1C) \$ 278500. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. 278500. G. TOTAL INVESTMENT (1D - 1E - 1F) 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL

 274.
 \$ 7368.
 13.86
 \$ 102119.

 0.
 \$ 0.
 16.99
 \$ 0.

 0.
 \$ 0.
 17.38
 \$ 0.

 0.
 \$ 0.
 17.14
 \$ 0.

 0.
 \$ 0.
 13.56
 \$ 0.

 0.
 \$ 0.
 15.12
 \$ 0.

 \$ 0.
 13.47
 \$ 0.

 274.
 \$ 7368.
 \$ 102119.

 13.86 A. ELECT \$ 26.89 B. DIST \$.00 C. RESID \$.00 D. NAT G \$ 7.28 E. COAL \$.00 F. LPG \$.00 M. DEMAND SAVINGS N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) \$ 0. (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) 0. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT DISCOUNTED
COST(-) OC FACTR SAVINGS(+)/
(1) (2) (3) COST(-)(4) ITEM \$ 0. d. TOTAL 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 7368. 37.80 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 102119. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = .37 (IF < 1 PROJECT DOES NOT QUALIFY)

ECO-6 FREE COOLING

Existing.

Building 2700 utilizes a variety of cooling equipment. Included in that equipment are three (3) water cooled chillers.

The existing electric costs for these three (3) chillers are estimated to be \$23,400. Refer to Table ECO-6-E for the existing analysis.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	399	47,863	87,155	461	\$12,609
Summer	321	51,433	63,818	393	\$10,806
Totals	720	99,296	150,973	854	\$23,415

Proposed.

To install plate and frame heat exchangers in close proximity to the existing chillers utilizing tower water for free cooling during the colder seasons. For this analysis we will assume that free cooling is available during the winter months. The only system energy considered during this period will be the air handlers and the chilled water pumps. Tower, pumps, and fans will be considered to be uneffected. Pumping is constant and the impact on the towers will be insignificant.

The yearly electric costs associated with operating these systems with free cooling during the winter months is approximately \$19,000. Refer to Table ECO-6-P.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	315	30,361	50,960	278	\$8,201
Summer	321	51,433	63,818	393	\$10,806
Totals	636	81,794	114,778	671	\$19,007

Entech Engineering, Inc.

Construction

Cost.

The construction costs to implement this ECO are estimated to be near \$89,400. Refer to the estimate attached.

Material	\$47,200
Labor	33,200
SIOH	4,000
Engineering	<u>5,000</u>
Total	\$89,400

Savings.

The electric energy cost savings associated with implementing this ECO is approximately \$4,400.

Season	Demand (kW)	Off-Peak (kWh/yr)	On-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Non-Summer	84	17,502	36,195	183	\$4,408
Summer	0	0	0	0	\$0
Totals	84	17,502	36,195	183	\$4,408
Percent Reduction	11.7%	17.6%	24.0%	21.4%	18.8%

Maintenance

Savings.

There are no significant maintenance savings associated with this ECO.

Discussion.

Payback = 20.3 years

SIR = 0.7

This ECO is not recommended because the savings do not justify the cost for equipment replacement.

			HVAC Airside Equipment - General Inform	nation	Cooling Equipment	Total	Winter Intern
HVAC	Design/Site	Equip.	Field	Area	Field	Connected	Demand Dema
Item	Designation	Туре	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month kW/mc
97	AC-3	AHU	unknown(MR - 22 North 2C/D100 Area)	2D130 electronics lab	Compressor in MR-21 & tower on roof	28 2	7.1
106	AC-14	AHU	unknown(MR - 23 East 2C/D200 Area)	2D306 tab area	Compressor in MR-23 & tower on roo!	38 7	19 4
152	AC-7	AHU	unknown(MR - 41 South 4C/D100 Area)	4D110 lab/offices	Compressor in MR-41 & tower on roof	40.2	10 1
				TOTALS		107	36

FT. MC BUILDING

			HVAC Airside Equipment - General Infon	mation	Cooling Equipment	Total	Winter Inter
HVAC	Design/Site	Equip.	Field	Area	Field	Connected	Demand Dem
ttem_	Designation	Type	Data/Reference/(Location)	Served	Data/Reference/(Location)	Load (kW)	kW/month:kW/m
97	AC-3	AHU	iunknown(MR - 22 North 2C/D100 Area)	2D130 electronics lab	Compressor in MR-21 & tower on roof	28.2	5.0
106	AC-14	AHU	iunknown(MR - 23 East 2C/D200 Area)	2D306 lab area	Compressor in MR-23 & tower on roof	38 7	7.5
152	AC-7	AHU	iunknown(MR - 41 South 4C/D100 Area)	4D110 lab/offices	Compressor in MR-41 & tower on roof	40 2	3 0
				TOTALS		107	16

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - FREE COOLING

TABLE ECO-6-E

						l w	inter Billi	ng Mor	iths	inte	mediate B	illing I	Aonths		ummer B	lling M	onths	L	
mation	Cooking Equipment	Total	Winter	Intermed.	Summer	Off-	Peak	On	-Peak	Off	-Peak	On	-Peak	Off	-Peak	Oi	n-Peak		_
Area	Field	Connected	Demand	Demand	Demand	hrs/		hrs/		hrs/		hrs/		hrs/	1	hrs/		Demand	_c
Served	Data/Reference/(Location)	Load (kW)	kW/month	kW/month	kW/month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	-kWh/Mo	day	kWh/Mo	kW/Yr.	_K
2D130 electronics lab	Compressor in MR-21 & tower on roof	28.2	7 1	14 1	21 2	1	846	4	2,257	2	1,693	4	2,257	4	3.386	6	3,386	85	_
2D306 lab area	Compressor in MR-23 & tower on roof	38 7	19 4	29 0	29.0	2	2.322	6	4,645	3	3,483	. 8	6,193	4	4,645	10	7,741	194	
4D110 lab/offices	Compressor in MR-41 & tower on roof	40 2	10 1	20 1	30 2	1	1.207	4	3,219	2	2 414	4	3,219	4	4,828	6	4,828	121	
TOTALS		107	36	63	80	4	4,376	14	10,120	7	7,590	16	11,668	12	12,858	22	15,954	399	_

FT. MONMOUTH, DEPARTMENT OF THE ARMY BUILDING 2700 ELECTRIC MODEL - FREE COOLING

TABLE ECO-6-P

						V	Vinter Billi	ng Mon	iths	Inter	mediate B	illing (Months		summer Bi	lling M	onths	1	
mation	Cooling Equipment	Total	Winter	i intermed.	Summer	Off	-Peak	On-	Peak	Off	-Peak	On	-Peak	Off	-Peak	Or	n-Peak		
Area	Field	Connected	Demand	i Demand	Demand	hrs/		hrs/		hrs/	1	hrs/		hrs/	i	hrs/		Demand	i C
Served	Data/Reference/(Location)	Load (kW)	kW/month	!kW/month	kW/month	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo_	day	·kWh/Mo	day	'kWh/Mo'	day	kWh/Mo	kW/Yr.	K
.2D130 electronics lat:	Compressor in MR-21 & tower on roof	28.2	5 (14 1	21.2	0	. 0	0.5	282	2	1,693	4	2.257		3,386	6	3,386	76	6
2D306 lab area	Compressor in MR-23 & tower on roof	38.7	7.5	29 0	29.0	0	. 0	0.5	387	3	3,483	8	6,193	4	4.645	10	7,741	146	6
4D110 lab/offices	Compressor in MR-41 & tower on roof	40.2	3 0	20 1	30.2	0	0	0.5	402	2	2,414	. 4	3,219	4	4,828	6	4,828	91	2
TOTALS		107	16	63	80	0	0	1.5	1,072	7	7,590	16	11,668	12	12,858	22	15,954	315	5

MENT OF THE ARMY ODEL - FREE COOLING

`-6-E

ı Mon	iths	Inte	rmediate B	itting l	Months	S	ummer Bi	lling Me	onths										
On-	Peak	Off	-Peak	On	Peak	Off	Peak	Or	-Peak		Non-S	ummer			Sum	mer		Annual	
nrs/		hrs/		hrs/		hrs/	i	hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	1 1
day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo-	day	kWh/Mo	kW/Yr.	KWH/Yr.	KWH/Yr.	5	kW/Yr.	KWH/Yr.	KWH/Yr.	s	S	No.
4	2.257	2	1,693	4	2,257	4	3.386	- 6	3.386	85	10.157	18,057	\$2.644	85	13,543	13,543	\$2 609	\$5 ,253	97
6	4.645	3	3,483		6,193	4	4,645	10	7,741	194	23,223	43.349	\$6,194	116	18.578	30.963	\$4 476	\$10,670	106
4	3,219	2	2 414	4	3 219	4	4,828	- 6	4,828	121	14 484	25 749	\$3 770	121	19,312	19 312	\$3 720	\$7 490	152
14	10,120	7	7,590	16	11,668	12	12,858	22	15,954	399	47,863	87,155	\$12,609	321	51,433	63,818	\$10,806	\$23,414	

WENT OF THE ARMY ODEL - FREE COOLING

-6-P

Mon	ths	inte	rmediate B	dling N	onths	S	ummer Bil	ling M	onths										
On-	Peak	Off	-Peak	On-	Peak_	Off	-Peak	Or	1-Peak		Non-S	ummer			Sum	mer		Annual	
IFE/		hrs/	1	hrs/		hrs/	i	hrs/		Demand	Off-Peak	On-Peak	Cost	Demand	Off-Peak	On-Peak	Cost	Cost	j
1ay	kWh/Mo	day	kWh/Mo-	day	kWh/Mo	day	kWh/Mo	day	kWh/Mo	kW/Yr	KWH/Yr.	KWH/Yr	\$	kW/Yr	KWH/Yr	KWH/Yr.	s	s	No.
0.5	282		1,693	4	2,257	4	3,386	6	3,386	76	6,771	10,157	\$1,793	85	13,543	13,543	\$2,609	\$4,402	97
0.5	387	3	3,483	8	6,193	4	4,645	10	7,741	146	13,934	26,319	\$3,988	116	18,578	30,963	\$4,476	\$8,465	106
0.5	402		2 414	4	3,219	4	4,828	6	4,828	9?	9,656	14,484	\$2,419	121	19,312	19 312	\$3,720		
1.5	1,072	. 7	7,590	16	11,668	12	12,858	22	15,954	315	30,361	50,960	\$8,201	321	51,433	63,818	\$10,806		

FORT MONMOUTH PROJECT COST ESTIMATE FREE COOLING (ECO-6)

NO.	DESCRIPTION	QTY	UNIT	MATER	RIAL	LAB	OR	TOTAL BARE
			_	\$/UNIT	COST	\$/UNIT	COST	COST
1	Install P & F Heat Exchanger (#97)	1	Each	\$8,000.00	\$8,000	\$3,000.00	\$3,000	\$11,000
	Misc. Controls, Valves, etc.	1	Lot	\$4,000.00	\$4,000	\$2,000.00	\$2,000	\$6,000
3	Piping, foundation, etc.	1	Each	\$1,000.00	\$1,000	\$1,500.00	\$1,500	\$2,500
4					\$0		\$0	\$0
5	Install P & F Heat Exchanger (#106)	1	Each	\$8,000.00	\$8,000	\$3,000.00	\$3,000	\$11,000
6	Misc. Controls, Valves, etc.	1	Lot	\$4,000.00	\$4,000	\$2,000.00	\$2,000	\$6,000
	Piping, foundation, etc.	1	Each	\$1,000.00	\$1,000	\$1,500.00	\$1,500	\$2,500
8					\$0		\$0	\$0
9	Install P & F Heat Exchanger (#152	1	Each	\$8,000.00	\$8,000	\$3,000.00	\$3,000	\$11,000
	Misc. Controls, Valves, etc.	1	Lot	\$4,000.00	\$4,000	\$2,000.00	\$2,000	\$6,000
11	Piping, foundation, etc.	1	Each	\$1,000.00	\$1,000	\$1,500.00	\$1,500	\$2,500
12					\$0		\$0	\$0
13					\$0		\$0	\$0
14					\$0		\$0	\$0
15				,	\$0		\$0	\$0
16					\$0		\$0	\$0
17					\$0		\$0	\$0
18					\$0		\$0	\$0
19					\$0		\$0	\$0
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27					\$0		\$0	\$0 \$0 \$0 \$0 \$0
28 29					\$0		\$0	\$0
30					\$0		\$0	\$0
31					\$0		\$0	\$0
32					\$0		\$0	\$0
33					\$0		\$0	\$0
34					\$0	**	\$0	\$0
35					\$0		\$0	\$0
36					\$0		\$0	\$0
37		-			\$0		\$0	\$0 \$0 \$0 \$0
38					\$0		\$0	\$0
39					\$0		\$0	\$0
40					\$0		\$0	\$0
41					\$0		\$0	\$0
42					\$0		\$0	\$0
43					\$0		\$0	\$0
44		<u> </u>			\$0		\$0	\$0
45		<u> </u>			\$0		\$0	\$0
46					\$0		\$0	\$0 \$0
47					\$0		\$0	
48					\$0		\$0	\$0
49		ļ			\$0		\$0	\$0 \$0
50		<u> </u>			\$0 \$0		\$0 \$0	\$0 \$0
51		<u> </u>	1		20		⊅ ∪	\$58,500
	SUBTOTAL OVERHEAD AND PROFIT	ļ			\$3,900		\$10,700	\$14,600
	OVERHEAD AND PROFIT	ļ			\$3,900		\$ 10,700	⊅ 14,000
	CITY COST INDEX MULTIPLIER DIFFICULTY FACTOR				-			
	CONTINGENCY				\$4,300		\$3,000	\$7,300
	SIOH(5.5%) & DESIGN FEE(6%)			4,000	⊅4,3 00	5,000	\$3,000	\$9,000
<u> </u>	BASE TOTAL COST	<u> </u>		4,000	\$47,200	5,000	\$33,200	\$89,400

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28-Jun-96

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#6 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 80400.

B. SIOH \$ 4000.

C. DESIGN COST \$ 5000.

D. TOTAL COST (1A+1B+1C) \$ 89400. E. SALVAGE VALUE OF EXISTING EQUIPMENT S F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 89400. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5)

 183.
 \$ 4408.
 13.86
 \$

 0.
 \$ 0.
 16.99
 \$

 0.
 \$ 0.
 17.38
 \$

 0.
 \$ 0.
 17.14
 \$

 0.
 \$ 0.
 13.56
 \$

 0.
 \$ 0.
 15.12
 \$

 \$ 0.
 13.47
 \$

 183.
 \$ 4408.
 \$

 A. ELECT \$ 24.09 61101. B. DIST \$.00 0. C. RESID \$.00 0. D. NAT G \$ 7.28 E. COAL \$.00 0. 0. F. LPG \$.00 0. M. DEMAND SAVINGS 0. N. TOTAL 61101. 3. NON ENERGY SAVINGS(+) / COST(-) \$ 0. A. ANNUAL RECURRING (+/-) (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) 0. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT DISCOUNTED

COST(-) OC FACTR SAVINGS(+)/

(1) (2) (3) COST(-)(4) ITEM d. TOTAL \$ 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 0. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 4408. 20.28 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) 61101. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = .68

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-7 2-SPEED TOWER FAN OPERATION

Existing.

Currently the MCA Chilled Water System uses a single, 4 cell - 1,380 ton cooling tower. The tower contains four single speed, 20 hp fans. The tower was installed during the 1983 renovation under the Major Construction Activities Program (MCA). The cooling system is presently operated from mid May through mid October. As indicated in Section 5, a DOE hourly simulation was performed. The annual electric energy demand and usage for the tower as calculated in DOE is 246 kW and 140,967 kWh. These quantities yield an annual energy cost of \$11,600. DOE simulation output can be found in Attachment 8.12

Component	Demand (kW)	On-Peak (kWh/yr)	Off-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Tower Fan	246	51,083	89,884	481	\$11,600
Totals	246	51,083	89,884	481	\$11,600

Proposed.

Replace existing single speed motors with two speed motors and install a programmable logic controller (PLC) to control the operation of each fan. Fan operation would be adjusted by monitoring the temperature in the return line to the chillers. A DOE simulation model was performed with tower fan selection changed to "Two Speed". The summarized results are shown in the following table. A detailed two day DOE hourly report for the tower fan can be seen on the following page titled "2 Speed Tower Fan Hourly Profile".

The new fans and controls will have an annual electric demand and usage of 246 kW and 99,790 kWh. The annual energy cost for the Tower will be \$9,000.

Component	Demand (kW)	On-Peak (kWh/yr)	Off-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Tower Fan	246	45,475	54,315	341	\$9,000
Totals	246	45,475	54,315	341	\$9,000

Construction

The expected construction cost is \$29,700.

Cost.

(See Attached Cost Breakdown).

 Material
 \$ 10,800

 Labor
 \$ 15,800

 SIOH
 \$ 1,500

 Engineering
 \$ 1,600

 Total
 \$ 29,700

Savings.

The annual cost savings resulting from the implementation of this project will be \$2,600 (\$11,600 - \$9,000).

Component	Demand (kW)	On-Peak (kWh/yr)	Off-Peak (kWh/yr)	Energy (mmBtu/yr)	Cost (\$/yr)
Totals	0	35,569	5,608	141	\$2,600
Percent Reduction	0.0%	69.6%	6.2%	29.3%	22.4%

Maintenance

Savings:

There is no additional monetary savings due to reduced

maintenance.

Discussion.

Payback = 11.4 years

SIR = 1.2

The expected payback resulting from the implementation of this project is 11.4 years ($$29,700 \div $2,600$). This ECO is not recommended. If the tower operated with a year round load, the savings would then suggest implementation.

DOE Output Single Speed Fans vs 2 Speed Fans Hourly Profile

				Single		Two	
		Tower	Maximum	Speed Fan	Percent	Speed Fan	Percent
Day	Time	Temperature	kWh	kWh	Of Full	kWh	Of Full
May, 25th	1 am	65	41	33	80%	5	11%
may, 25th	2	65	41	32	77%	5	11%
	3	65	41	32	78%	5	11%
	4	65	41	32	78%	5	11%
	5	65	41	32	77%	5	11%
	6	65	41	33	80%	5	11%
	7	65	41	37	89%	11	26%
	8	65	41	40	95%	28	68%
	9	65	41	41	100%	41	98%
	10	65	41	41	100%	41	100%
	11	66	41	41	100%	41	100%
		66	41	41	100%	41	100%
	12 pm	69	41	41	100%	41	100%
	1	67	41	41	100%	41	100%
	2 3	65	41	41	100%	41	100%
	4	65	41	41	99%	38	91%
	5	65	41	41	98%	36	87%
	6	65	41	41	98%	36	86%
	7	65	41	39	94%	24	58%
		65	41	38	93%	21	50%
	8				93% 89%	10	
	9	65	41	37			25%
	10	65	41	37	88% 87%	7	17% 12%
	11	65	41	36	87% 81%	5	12%
M 264h	12	65	41	33	80%	5	11%
May 26th	1 am	65	41	33	80% 80%	5	11%
	2	65	41	33	78%	5	11%
	3 4 5	65	41	32	77%	5	11%
		65	41 41	32 32	78%	5	11%
	6	65	41	36	88%	7	16%
	7	69	41	41	100%	41	100%
	8	72	41	41	100%	41	100%
	9	75	41	41	100%	41	100%
	10	76	41	41	100%	41	100%
				l	100%	41	100%
	12 nm	77	41 41	41	100%	41	100%
	12 pm	80		41	100%	41	100%
	1		41			41	100%
	2		41	41	100%		100%
	3		41	41	100%	41 41	100%
	4		41	41	100%		
	5		41	41	100%	41	100%
	6		41	41	100%	41	100%
	7		41	41	100%	41	100%
	8		41	41	100%	40	97%
	9		41	41	99%	39	94%
	10		41	41	99%	38	91%
	11		41	41	98%	36	86%
	12	74	41	40	97%	34	81%

Entech Engineering, Inc.

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2 Speed Tower Fans

rropusea Op	roposeu Operation, 2 Speca 10wer I un, DOL Statuturon Output	r iamor naa	un, vor or	maiann	nipui						
		Chiller			Tower Fan		သ	Condenser Pump	du	Chilled W	Chilled Water Pump
	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	Annual
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh
January	0	0	0	0	0	0	0	0	0		
February	0	0	0	0	0	0	0	0	0		
March	0	0	0	0	0	0	0	0	0		
April	0	0	0	0	0	0	0	0	0		
May	369	23,978	19,785	41	3,725	2,473	27	3,499	6,680		
June	442	68,049	59,131	41	10,410	12,031	27	866'9	12,087		
July	422	66,947	75,296	41	9,917	16,297	27	6,361	13,359		
August	440	76,910		41	11,320	13,069	27	7,316	12,405		
September	364	51,288	48,917	41	8,265	8,729	27	089'9	12,405		
October	271	13,965	13,958	41	1,838	1,716	27	2,863	6,680		
November	0	0	0	0	0	0	0	0	0		
December	0	0	0	0	0	0	0	0	0		
Totals	2,308	301,137	281,007	246	45,475	54,315	162	33,717	63,616	493	493 278,465

DOE Simulation, MCA Chilled Water Plant, Existing

	Chiller			Tower Fan		Col	Condenser Pump	du	Chilled W	Chilled Water Pump
Annual	Off-Peak	On-Peak	Annual	Off-Peak	Off-Peak On-Peak	Annual	Off-Peak On-Peak	On-Peak	Annual	Annual
kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh
0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0		
369	23,982	19,785	41	5,108	8,502	27	3,499	089'9		
442	68,071	59,135	41	10,784	17,499	27	6,998	12,087		
422	66,972	75,300	41	9,870	20,090	27	6,361	13,359		
441	76,939		41	11,339	18,287	27	7,316	12,405		
365	51,299	48,917	41	10,016	17,281	27	0,89	12,405		
271	13,966	13,958	41	3,966	8,225	27	2,863	6,680		
0	0	0	0	0	0	0	0	0		
0	0	0	0	0	0	0	0	0		
2,310	301,229	281,018	246	51,083	89,884	162	33,717	63,616	493	278,465

Note: DOE does not provide monthly energy usage quantities for chilled water pumps, only annual, demand # is from Electric Model

FORT MONMOUTH PROJECT COST ESTIMATE

Two Speed Tower Fans

NO.	DESCRIPTION	QTY	UNIT	MATE		LABO		TOTAL BARE
				\$/UNIT	COST	\$/UNIT	COST	COST
1	Programmable Logic Controller	1	Each	\$3,000.00	\$3,000	\$1,500.00	\$1,500	\$4,500
2	Fan Switch	4	Each	\$100.00	\$400	\$200.00	\$800	\$1,200
3	Temperature Transmitter	1	Lot	\$500.00	\$500	\$1,000.00	\$1,000	\$1,500
4	Control Integration	1	Lot	\$500.00	\$500	\$1,500.00	\$1,500	\$2,000
5	Control Wiring	1	Lot	\$500.00	\$500	\$500.00	\$500	\$1,000
6	Two Speed Motors, 20 hp	4	ea	\$1,000.00	\$4,000	\$1,000.00	\$4,000	\$8,000
7					\$0		\$0	\$0
8					. \$0		\$0	\$0
9					\$0		\$0	\$0
10		† <u>-</u> -			\$0		\$0	\$0
11		t			\$0		\$0	\$0
12		† 			\$0		\$0	\$0
13		 			\$0		\$0	\$0
14		 			\$0		\$0	\$0
15		 			\$0		\$0	\$0 •
								\$0
16		 			\$0		\$0	\$0
17					\$0		\$0	\$0
18		1			\$0		\$0	\$0
19		1			\$0		\$0	\$0
20					\$0		\$0	\$0
21					\$0		\$0	\$0
22					\$0		\$0	\$0
23				_	\$0		\$0	\$0
24		<u> </u>			\$0		\$0	\$0
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28		 			\$0		\$0	\$0
29					\$0		\$0	\$0
		 						3 0
30					\$0		\$0	\$0
31					\$0		\$0	\$0
32					\$0		\$0	\$0
33					\$0		\$0	\$0
34		1			\$0		\$0	\$0
35					\$0		\$0	\$0
36					\$0		\$0	\$0
37					\$0		\$0	\$0
38					\$0		\$0	\$0
39			-		\$0		\$0	\$0
40					\$0		\$0	\$0
41					\$0		\$0	\$0
42					\$0		\$0	\$0
43		 			\$0		\$0	\$0
44		1			\$0		\$0	\$0
45		 						- 0 0
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46		 			\$0		\$0	\$0
47		 			\$0		\$0	\$0
48		ļ			\$0		\$0	\$0
49					\$0		\$0	\$0
50		<u> </u>			\$0		\$0	\$0
51					\$0		\$0	\$0
52					\$0		\$0	\$0
53					\$0		\$0	\$0
54					\$0		\$0	\$0
55		 			\$0		\$0	\$0
56		 			\$0		\$0	\$0
57		 			\$0		\$0	\$0 \$0
58		+			\$0		\$0 \$0	\$0 \$0
59		 						
		1			\$0		\$0	\$0
60					\$0	-	\$0	\$0
61		 			\$0		\$0	\$0
62		1			\$0		\$0	\$0
63					\$0		\$0	\$0
_	SUBTOTAL							\$18,200
	OVERHEAD AND PROFIT				\$900		\$5,100	\$6,000
	CITY COST INDEX MULTIPLIER							
	DIFFICULTY FACTOR							
	CONTINGENCY				\$1,000		\$1,400	\$2,400
	SIOH(5.5%) & DESIGN FEE(6%)	1		\$1,500	φ1,000	\$1,600	Ψ1,700	\$2,400 \$3,100
	BASE TOTAL COST	<u> </u>		\$ 1,500	\$10,800	\$1,000	\$15,800	\$29,700

LIFE CYCLE COST ANALYSIS SUMMARY STU ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LO INSTALLATION & LOCATION: REGION NOS. 2 CENS PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#7 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED	
1. INVESTMENT A. CONSTRUCTION COST \$ 26600. B. SIOH \$ 1500. C. DESIGN COST \$ 1600. D. TOTAL COST (1A+1B+1C) \$ 29700. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 2	29700.
2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 199 UNIT COST SAVINGS ANNUAL \$ DISCOUNT FUEL \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR	NT DISCOUNTED
A. ELECT \$ 18.44 141. \$ 2600. 13.8 B. DIST \$.00 0. \$ 0. 16.9 C. RESID \$.00 0. \$ 0. 17.3 D. NAT G \$ 7.28 0. \$ 0. 17.3 E. COAL \$.00 0. \$ 0. 13.5 F. LPG \$.00 0. \$ 0. 15.3 M. DEMAND SAVINGS \$ 0. 13.4 N. TOTAL 141. \$ 2600.	36 \$ 36037. 39 \$ 0. 38 \$ 0. 4 \$ 0. 56 \$ 0. 12 \$ 0. 17 \$ 0. \$ 36037.
3. NON ENERGY SAVINGS(+) / COST(-)	
A. ANNUAL RECURRING (+/~) (1) DISCOUNT FACTOR (TABLE A) (2) DISCOUNTED SAVING/COST (3A X 3A1)	\$ 0. 17 \$ 0.
B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT I ITEM COST(-) OC FACTR S	DISCOUNTED SAVINGS(+)/ COST(-)(4)
d. TOTAL \$ 0.	0.
C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3	3Bd4)\$ 0.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LI	[FE))\$ 2600.
5. SIMPLE PAYBACK PERIOD (1G/4)	11.42 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C)	\$ 36037.
7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = (IF < 1 PROJECT DOES NOT QUALIFY)	1.21

ECO-8 REPLACE DHW RECIRCULATION PUMPS

Existing.

Same existing conditions as the Base Case in ECO-1.

Proposed.

No changes.

Construction

Cost.

No changes.

Savings.

No changes.

Discussion.

This ECO was not analyzed because the basis for ECO-1 assumed that the pumps that were determined to be out of service will be repaired/replaced as part of the buildings' general maintenance program.

ECO-9 AUTOMATED HW TEMPERATURE RESET BASED ON OUTSIDE AIR TEMPERATURE

Existing.

Currently several areas throughout Building 2700 receive heat from the MCA hot water system. This system is generally operated for seven (7) months out of a year. For the most part circulated water temperature is manually adjusted with the bulk of the heating season being kept at 180 °F regardless of outside conditions. Maintaining a relatively constant temperature in the fluid has caused overheating conditions throughout the building during periods of milder outside air temperature. Note: For this ECO we assumed that the controls with the new boiler installations in Building 2706 do not include temperature reset for the hot water boilers.

The existing MCA DOE model was simulated with a 4°F throttling range to simulate inadequacies in temperature control. The DOE model calculated an annual gas consumption for space heating only (no losses) at 4,979 mcf/yr. In addition, there are losses occurring through the wall of the supply and return pipe while the temperature of the fluid is maintained at 180°F. The attached calculation sheet indicates that an additional 809 mcf/yr is required to offset losses in approximately 3,500 feet of 8" pipe. The total gas usage for the MCA system (Heating, Pipe Losses) has an annual energy cost of \$43,400.

Gas Usage (heat) = 4,979 mcf/yr

Gas Usage (loss) = 809 mcf/yr

Total Gas Usage = 5,788 mcf/yr (4,979 mcf/yr + 809 mcf/yr)

Gas Energy = $5,962 \text{ mmBtu/yr} (5,788 \text{ mcf/yr} \times 1.031)$

mmBtu/mcf)

Gas Cost = \$43,400 (5,788 mcf/yr x \$7.50/mcf =

\$43,410, use \$43,400)

Proposed.

Install outside air temperature sensor and controller to allow the boiler water supply temperature to be reset. The new controls would allow the temperature of the fluid to reach 180°F when the outside air temperature is 0°F and adjust on a linear curve to a temperature of 130°F at 60°F. The control would reduce overheating in spaces and losses in the pipe due to lower fluid temperatures. The DOE model was revised and recalculated with the throttling range lowered to 2°F. In addition, the pipe losses were recalculated at an average fluid temperature of 160°F. The annual gas usage for the MCA system (heat and losses) would be lowered to 5,447 with an annual cost of \$40,900.

Gas Usage (heat) = 4,785 mcf/yr

Gas Usage (loss) = 662 mcf/yr

Total Gas Usage = 5,447 mcf/yr (4,785 mcf/yr + 662 mcf/yr)

Gas Energy = $5,610 \text{ mmBtu/yr} (5,447 \text{ mcf/yr} \times 1.031)$

mmBtu/mcf)

Gas Cost = \$40,900 (5,447 mcf/yr x \$7.50/mcf =

\$40,853, use \$40,900)

Construction Cost.

The expected construction cost for this ECO is \$14,000. (Reference attached cost estimate).

 Material
 \$ 7,300

 Labor
 \$ 5,200

 SIOH
 \$ 700

 Engineering
 \$ 800

 Total
 \$ 14,000

Savings.

The annual cost savings resulting from the implementation of this project will be \$2,500 (\$43,400 - \$40,900).

Gas Usage

341 mcf/yr (5,788 mcf/yr - 5,447 mcf/yr)

Energy Usage

351 mmBtu [341 mcf/yr x 1,030,000

Btu/mcf) ÷ 1,000,000 Btu/mmBtu]

Maintenance

Savings.

There is no additional monetary savings due to reduced maintenance.

Discussion.

Payback

5.6 years

SIR

3.1

The payback for this ECO is 5.6 years. It is possible that the new boilers have this feature, or at least the feature on the boiler to vary the outlet temperature. For the cost estimate, we have assumed that the installation does not include these features.

We recommend that this ECO be adopted for energy savings and better temperature control.

Estimated Energy Loss for Supply/Return Piping, MCA Heating System

Existing: 3,500 ft of supply and return piping with an average size of 8" and 2" insulation

U Factor = 0.15 Btu/sf/°F

Pipe Area = 3,500 ft x 2.26 ft (circ of 8") = 7,910 sf

Average Fluid Temperature = 180°F

Average Surrounding Air Temperature = 70°F

Energy Loss (Q) = $U \times A \times Delta T$

 $Q = 0.15 \text{ Btuh/sf/}^{\circ}\text{F x 7,910 sf x (180}^{\circ}\text{F} - 70^{\circ}\text{F})$

Q = 130,515 Btuh

Annual Energy Loss = Btuh x $8,760 \text{ hrs/yr} \times 7 \text{ mo/}12 \text{ mo/}1,030,000 \text{ Btu/mcf/eff}$

Loss = 130,515 Btuh x 8,760 hrs/yr x 7 mo/12 mo/1,030,000 Btu/mcf/.80

Loss = 809 mcf/yr

Cost = \$6,100 (809 mcf/yr x \$7.50/mcf)

Proposed: 3,500 ft of supply and return piping with an average size of 8" and 2" insulation

U Factor = 0.15 Btu/sf/°F

Pipe Area = 3,500 ft x 2.26 ft (circ of 8") = 7,910 sf

Average Fluid Temperature = 160°F

Average Surrounding Air Temperature = 70°F

Energy Loss $(Q) = U \times A \times Delta T$

 $Q = 0.15 \text{ Btuh/sf/}^{\circ}\text{F x 7,910 sf x (160}^{\circ}\text{F - 70}^{\circ}\text{F})$

Q = 106,785 Btuh

Annual Energy Loss = Btuh x $8,760 \text{ hrs/yr} \times 7 \text{ mo/}12 \text{ mo/}1,030,000 \text{ Btu/mcf/eff}$

Loss = 106,785 Btuh x 8,760 hrs/yr x 7 mo/12 mo/1,030,000 Btu/mcf/.80

Loss = 662 mcf/yr

Cost = \$5,000 (662 mcf/yr x \$7.50/mcf)

FORT MONMOUTH PROJECT COST ESTIMATE Automated HW Temperature Reset

o .	DESCRIPTION	QTY	UNIT	MATER		LABO		TOTAL BARE
_				\$/UNIT	COST	\$/UNIT	COST	COST
	oiler Reset Controller	1	Each	\$5,000.00	\$5,000	\$1,500.00	\$1,500	\$6,5
	utdoor Sensor w/thermowell	1	Each	\$500.00	\$500	\$1,000.00	\$1,000	\$1,5
	ectric, Wiring, etc.	1	Lot	\$500.00	\$500	\$500.00	\$500	\$1,0
4		<u>i</u> l			\$0		\$0	
5					\$0		\$0	
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		 			\$0		\$0	
8								
9					\$0		\$0	
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		-			\$0		\$0	
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)					\$0		\$0	
П					\$0		\$0	
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		+						
5		1			\$0		\$0	
3		1			\$0		\$0	
7					\$0		\$0	
3					\$0		\$0	
9 !		1			\$0		\$0	
<u>5</u>		1			\$0		\$0	
1		+						
		+			\$0		\$0	
2					\$0		\$0	
3					\$0		\$0	
ารเ	JBTOTAL		i					\$9,
	VERHEAD AND PROFIT	1			\$600		\$1,700	\$2,
	TY COST INDEX MULTIPLIER				7000		Ţ.,. VV	Ψω,
	FFICULTY FACTOR							
					A=0.0		8500	
10	ONTINGENCY OH(5.5%) & DESIGN FEE(6%)			\$700	\$700	\$800	\$500	\$1, \$1,
-12:								

LIFE CYCLE COST A ENERGY CONSERVATION IN INSTALLATION & LOCATION: PROJECT NO. & TITLE: FISCAL YEAR DISCRETE P ANALYSIS DATE: 07-03-96 E	ORTION NAM	ME: ECO#	9			5 (92)
1. INVESTMENT A. CONSTRUCTION COST \$ B. SIOH \$ C. DESIGN COST \$ D. TOTAL COST (1A+1B+1C) \$ E. SALVAGE VALUE OF EXISTIN F. PUBLIC UTILITY COMPANY R G. TOTAL INVESTMENT (1D - 1	12500. 700. 800. 14000. G EQUIPMEN EBATE E - 1F)	NT \$ \$	0. 0.	\$ 1400	00.	
2. ENERGY SAVINGS (+) / COS DATE OF NISTIR 85-3273-X US UNIT COST SA FUEL \$/MBTU(1) MB	ED FOR DIS VINGS TU/YR(2)	ANNUAL SAVING	; \$ \$S(3)	DISCOUNT FACTOR(4)	DISC SAVI	OUNTED NGS (5)
A. ELECT \$ 86.19 B. DIST \$.00 C. RESID \$.00 D. NAT G \$ 7.28 E. COAL \$.00 F. LPG \$.00 M. DEMAND SAVINGS N. TOTAL	0. 0. 0. 351. 0. 0.	\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$	0. 0. 0. 555. 0. 0. 0.	13.86 16.99 17.38 17.14 13.56 15.12 13.47	<i>ው ው ው ው ው ው ው</i>	0. 0. 0. 43798. 0. 0. 0. 43798.
3. NON ENERGY SAVINGS(+) / A. ANNUAL RECURRING (+/- (1) DISCOUNT FACTOR (2) DISCOUNTED SAVING	COST(-)) (TABLE A)			13.47		o. o.
B. NON RECURRING SAVINGS	SAVINGS (+ COST (-)		FACTR		NGS (+) /
d. TOTAL	\$ 0.	•			0.	
C. TOTAL NON ENERGY DISC	OUNTED SAV	/INGS(+)	/COST(-) (3A2+3Bd4	:)\$	0.
4. FIRST YEAR DOLLAR SAVING	S 2N3+3A+	(3Bd1/(Y	RS ECON	OMIC LIFE))\$	2555.
5. SIMPLE PAYBACK PERIOD (10	G/4)				5	.48 YEARS
6. TOTAL NET DISCOUNTED SAV	INGS (2N5+	+3C)			\$	43798.
7. SAVINGS TO INVESTMENT RA (IF < 1 PROJECT DOES NO			=(6 / 10	G) =	3	.13

ECO-10 FULL CHILLED WATER STORAGE

Existing.

Currently Building 2700 utilizes a central chilled water system for a portion of its cooling needs. This system was installed during the 1983 renovation under the Major Construction Activities Program (MCA). This system has been referred to as "MCA Chilled Water Plant". As shown in Section 3 of this report the current system consists of the following equipment:

Description	Quantity, Size, Load
Centrifugal Chillers	2 - 690 tons - 538 kW/ea
Cooling Tower	1 - 1,380 Tons - 56 kW
Condenser Pumps	2 - 19 kW/ea
Chilled Water Pumps	2 - 75 kW/ea

The system is presently operated from mid May through mid October. As indicated in Section 5, a DOE hourly simulation was performed. DOE calculated a peak cooling load of 608 tons at 2:00 p.m. on August 18th. In addition, the highest total cooling load for the 12 hour on-peak period also occurred on August 18th. The following table shows the 24 hour profile for the peak day. The following table of on-peak cooling demands for the chilled water storage results in a total of 6,103 ton/hr. DOE simulation output for this ECO can be found in Attachment 8.12

Peak Cooling Day Profile

Hour	Load (Tons)	Hour	Load (Tons)
1 AM	211	1	590
2	195	2	607
3	186	3	579
4	172	4	495
5	156	5	473
6	231	6	430
7	361	7	382
8	438	8	354
9	484	9	336
10	518	10	318
11	550	11	301
12 PM	557	12 AM	284

The annual energy cost for the MCA chilled water system cooling system as based on DOE simulation results is \$103,200. Individual components are summarized below and shown in detail on the attached table titled "Existing Operation".

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Totals	3,211	478,445	620,565	3,751	\$103,100

DOE Simulation, MCA Chilled Water Plant, Existing

Chilled Water Pump	Annual	kWh			_										103 370 465
Chilled	Annual	kW													70
up	On-Peak	kWh	0	0	0	0	089'9	12,087	13,359	12,405	12,405	6,680	0	0	62 616
Condenser Pump	Off-Peak On-Peak	kWh	0	0	0	0	3,499	6,998	6,361	7,316	0,680	2,863	0	0	22 717
Con	Annual	kW	0	0	0	0	27	27	27	27	27	27	0	0	160
	On-Peak	kWh	0	0	0	0	8,502	17,499	20,090	18,287	17,281	8,225	0	0	100 00
Tower Fan	Off-Peak On-Peak	kWh	0	0	0	0	5,108	10,784	9,870	11,339	10,016	3,966	0	0	51 000
	Annual	kW	0	0	0	0	41	41	41	41	41	41	0	0	210
	On-Peak	kWh	0	0	0	0	19,785	59,135	75,300	63,923	48,917	13,958	0	0	201 010
Chiller	Off-Peak	kWh	0	0	0	0	23,982	68,071	66,972	76,939	51,299	13,966	0	0	000 100
	Annual	kW	0	0	0	0	369	442	422	441	365	271	0	0	0.00
		Month	January	February	March	April	May	June	July	August	September	October	November	December	

Note: DOE does not provide monthly energy usage quantities for chilled water pumps, only annual, demand # is from Electric Model

Proposed.

Utilize both existing 690 ton chillers to produce and store chilled water during utility off-peak periods when the cost for electricity is lower. Install equipment to store 6,200 ton-hour of chilled water for use during on-peak periods (Table above adds to 6,103 ton/hrs). This amount of storage is equivalent to approximately 750,000 gallons of chilled water storage.

During the on-peak period (8:00 a.m. to 8:00 p.m.), the stored chilled water will be utilized to meet 100% of the cooling load. The existing chiller, tower, and condenser pump chiller will not operate during the on-peak period. The operation of the chilled water pump will remain unchanged. During the off-peak (8:00 pm to 8:00 am) the 690 ton chiller will operate to meet both the building cooling load and chilled water tank charging. The storage system will be used from June to October during the summer electric rate period.

For this analysis, 100% storage was assumed. Therefore, the storage was sized so that during the on-peak period 100% of the cooling will be provided by the stored chilled water. On cooler days, a portion of the stored chilled water may be used to satisfy loads during the off-peak period. Use of the chilled water storage system will reduce demand charges. Generating cooling at night also takes advantages of the lower off-peak cost of energy (kWh). A DOE simulation model was performed based upon the above parameters with summarized results shown on the following table. With the new chilled water storage system the on-peak kWh will be shifted to off-peak hours. The table on the following page titles "Full Chilled Water Storage Hourly Profile" demonstrates the operation of the new system.

The new storage system will be buried on the grounds adjacent to the chilled water building. The existing chiller will be retained and will not require modifications. New piping and controls will need to be added. The annual energy cost for the MCA system will be \$67,000.

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	0	0	534,529	1,824	\$33,700
Tower Fan	0	0	111,018	379	\$7,000
Condenser Pump	0	0	51,784	177	\$3,300
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Totals	493	92,417	883,379	3,330	\$66,900

Cost.

The expected construction cost is \$892,000, use \$890,000. Based on experience for this type of energy storage, the average construction cost to implement is \$130 ton/hr. If the related payback is attractive we would then proceed with a more detailed estimate.

Material	\$ 500,000
Labor	\$ 300,000
SIOH	\$ 44,000
Engineering	\$ 48,000
Total	\$ 892,000

Savings.

The annual cost savings resulting from the implementation of this project will be \$36,200 (\$103,100 - \$66,900).

Demand kW = 2,718 kW/yr (3,211 kW/yr - 493 kW/yr)

On-Peak kWh = 386,028 kWh/yr (486,275 kWh/yr - 100,247 kWh/yr)

Off-Peak kWh = -262,814 kWh/yr (612,735 kWh/yr - 875,549 kWh)

Energy Usage = 420 mmBtu (((386,028 kWh/yr - 262,814

kWh/yr) x 3,413 Btu/kWh) ÷ 1,000,000

Btu/mmBtu]

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	(253,511)	163	\$27,000
Tower Fan	246	51,083	(21,134)	102	\$4,600
Condenser Pump	162	33,716	11,831	155	\$4,600
Chilled Water Pump	0	0	0	0	\$0
Totals	2,718	386,028	(262,814)	421	\$36,200

Maintenance

Savings.

There is no additional monetary savings due to reduced maintenance. In reality the maintenance costs would probably go up to some degree. For analysis purposes we have assumed no impact.

Discussion.

Payback = 24.6 years

SIR = 0.6

The expected payback resulting from the implementation of this project is 24.6 years (\$890,000 \div \$36,200). This ECO is not recommended because the savings do not justify the cost for equipment replacement.

Entech Engineering, Inc.

DOE Output Full Chilled Water Storage Hourly Profile

		Building	Chiller	Tank	Tank	
		Load	Load	Release	Charge	Losses
Day	Time	Tons	Tons	Tons	Tons	Tons
Aug 17th	1 am	184	717	0	508	25
	2	161	695	0	508	25
	3	152	685	0	508	25
1	4	138	672	0	508	25
	5	133	666	0	508	25
	6	201	501	0	275	25
	7	340	365	0	0	25
	8	410	0	435	0	25
ŀ	9	457	0	482	0	25
	10	475	0	500	0	25
	11	508	0	534	0	25
	12 pm	530	0	555	0	25
	1	538	0	564	0	25
	2	538	0	563	0	25
	3	507	0	532	0	25
	4	427	0	453	0	25
	5	410	0	435	0	25
	6	374	0	400	0	25
	7	299	0	324	0	25
	8	276	810	0	508	25
	9	251	785	0	508	25
	10	228	762	0	508	25
	11	212	746	0	508	25
:	12	197	731	0	508	25
Aug 18th	1 am	186	720	0	508	25
	2	169	703	0	508	25
	3	161	695	0	508	25
	4	147	680	0	508	25
	5	131	665	0	508	25
	6	206	739	0	508	25
	7	336	549	0	188	25
	8	413	0	438	0	25
	9	459	0	484	0	25
12	10	493	0	518	0	25
	11	525	0	550	0	25
	12 pm	531	0	557	0	25
	1	565	0	590	0	25
	2 3	582	0	607	0	25
		554	0	579	0	25
	4	470	0	495	0	25
	5	448	0	473	0	25
	6	405	0	430	0	25
	7	357	0	377	0	21
	8	329	823	0	464	30
	9	311	825	0	489	25
	10	293	825	0	507	25
	11	276	810	0	508	25
	12	259	793	0	508	25

Entech Engineering, Inc.

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14-Jun-96

Full Chilled Water Storage

roposed Operation, Full Chilled Water Storagez, DOE Simulation Output	eranon, run	Chillea Wa	ter Storage2	, DUE Sim	ulation Out	nt					
		Chiller			Tower Fan		ည	Condenser Pump		Chilled W	Chilled Water Pumn
	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	ff-Peak	Annial	Annual
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh		kWh
January	0	0	0	0	0	0	0	0	0		
February	0	0	0	0	0	0	0	C	· C		
March	0	0	0	0	0	0	0	0	0		
April	0	0	0	0	0	0	0	0	0		
May	0	0	39,911	0	0	9,852	0	0	5.415		
June	0	0	117,067	0	0	23,119	0	0	10,154		
July	0	0	137,542	0	0	25,544	0	C	10,492		
August	0	0	131,810	0	0	24,806	0	0	10,492		
September	0	0	87,862	0	0	20,391	0	· C	10,154		
October	0	0	20,337	0	0	7,306	0	0	5.077		
November	0	0	0	0	0	0	0	C	0		
December	0	0	0	0	0	0	0	0	· C		
Totals	0	0	534,529	0	0	111.018	0	C	51 784	403	493 278 465
						•		,	,	•	

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: M ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#10 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY:	ION1 FY95 (92)
1. INVESTMENT A. CONSTRUCTION COST \$ 800000. B. SIOH \$ 44000. C. DESIGN COST \$ 48000. D. TOTAL COST (1A+1B+1C) \$ 892000. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0. F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 892000.	
2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT D FUEL \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) S	SISCOUNTED
A. ELECT \$ 86.19	501729. 0. 0. 0. 0. 0. 0. 501729.
3. NON ENERGY SAVINGS(+) / COST(-)	
(1) DISCOUNT FACTOR (TABLE A) 13.47	0. 0.
B. NON RECURRING SAVINGS(+) / COSTS(-) SAVINGS(+) YR DISCNT DISCOU ITEM COST(-) OC FACTR SAVING (1) (2) (3) COST(-	S(+)/
d. TOTAL \$ 0.	0.
C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$	0.
4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$	36200.
5. SIMPLE PAYBACK PERIOD (1G/4)	24.64 YEARS
6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$	501729.
7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = (IF < 1 PROJECT DOES NOT QUALIFY)	.56

FORT MONMOUTH PROJECT COST ESTIMATE FULL CHILLED WATER STORAGE (ECO-10)

NO.	DESCRIPTION	QTY	UNIT	MATI	ERIAL	LAB	BOR	TOTAL BARE
140.	DEGORII NOR			\$/UNIT	COST	\$/UNIT	COST	COST
1	Storage Tank 750,000 Gallons	1	Each	\$250,000.00	\$265,000	\$80,000.00	\$80,000	\$345,000
2	Storage Tank Diffuser	1	Each	\$35,000.00	\$35,000	\$4,000.00	\$4,000	\$39,000
3	Excavation abd Backfill	1	Lot	\$10,000.00	\$10,000	\$30,000.00	\$30,000	\$40,000
	Insulation	1	Lot	\$30,000.00	\$30,000	\$10,000.00	\$10,000	\$40,000
5	Piping 12"	750	Each	\$58.00	\$43,500	\$49.00	\$36,750	\$80,250
6	Control Valve	2	Each	\$5,000.00	\$10,000	\$1,500.00	\$3,000	\$13,000
7	Controls	1	Lot	\$10,000.00	\$10,000	\$10,000.00	\$10,000	\$20,000
8	Pump, 50 HP	2	Each	\$4,900.00	\$9,800	\$1,100.00	\$2,200	\$12,000
9					\$0		\$0	\$(
10					\$0		\$0	\$0
11					\$0		\$0	\$0
12					\$0		\$0	\$(
13					\$0		\$0	\$0
14					\$0		\$0	\$0
15					\$0		\$0	\$0
16					\$0		\$0	\$0
17 18					\$0		\$0 \$0	\$0
					\$0			\$0 \$0
19 20		-			\$0 \$0		\$0 \$0	\$(
21		1			\$0 \$0		\$0 \$0	\$0
22		+			\$0		\$0	\$0
23		-			\$0		\$0	\$0
24		 			\$0		\$0	\$0
25		1			\$0		\$0	\$0
26			-		\$0		\$0	\$0
27					\$0		\$0	\$0
28					\$0		\$0	\$0
29					\$0		\$0	\$0
30					\$0		\$0	\$0
31					\$0		\$0	\$0
32		. 1			\$0		\$0	\$0
33					\$0		\$0	\$0
34					\$0		\$0	\$0
35					\$0		\$0	\$0
36 37					\$0 \$0		\$0 \$0	\$0 \$0
38					\$0 \$0		\$0	\$0
39					\$0		\$0	\$0
40		 			\$0		\$0	\$0
41					\$0		\$0	\$0
42					\$0		\$0	\$0
43					\$0		\$0	\$0
44					\$0		\$0	\$0
45					\$0		\$0	\$0
46					\$0		\$0	\$0
47					\$0		\$0	\$0
48					\$0		\$0	\$0 \$0
49					\$0		\$0	\$0
50					\$0		\$0	\$0
51	OLIDTOTAL				\$0		\$0	\$0
	SUBTOTAL OVERHEAD AND BROSIT	1			644 000		000.000	\$589,300
	OVERHEAD AND PROFIT				\$41,300		\$96,800	\$138,100
	CITY COST INDEX MULTIPLIER DIFFICULTY FACTOR	1						
	CONTINGENCY	+			£4E E00		607.000	670.000
		+		44.000	\$45,500	40.000	\$27,300	\$72,800
	SIOH(5.5%) & DESIGN FEE(6%) BASE TOTAL COST	1		44,000	\$500,000	48,000	\$300,000	\$92,000 \$892,000

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12-Jul-96

ECO-11 PARTIAL CHILLED WATER STORAGE

Existing.

Currently Building 2700 utilizes a central chilled water system for a portion of its cooling needs. This system was installed during the 1983 renovation under the Major Construction Activities Program (MCA). This system has been referred to as "MCA Chilled Water Plant". As shown in Section 3 of this report the current system consists of the following equipment:

Description	Quantity, Size, Load
Centrifugal Chillers	2 - 690 tons - 538 kW/ea
Cooling Tower	1 - 1,380 Tons - 56 kW
Condenser Pumps	2 - 19 kW/ea
Chilled Water Pumps	2 - 75 kW/ea

The system is presently operated from mid May through mid October. As indicated in Section 5, a DOE hourly simulation was performed. DOE calculated a peak cooling load of 608 tons at 2:00 p.m. on August 18th. In addition, the highest total cooling load for the 12 hour on-peak period also occurred on August 18th. The following table shows the 24 hour profile for the peak day. The following table of on-peak cooling demands for the chilled water storage results in a total of 6,103 ton/hr. DOE simulation output can be found in Attachment 8.12

Peak Cooling Day Profile

Hour	Load (Tons)	Hour	Load (Tons)
1 AM	211	1	590
2	195	2	607
3	186	3	579
4	172	4	495
5	156	5	473
6	231	6	430
7	361	7	382
8	438	8	354
9	484	9	336
10	518	10	318
11	550	11	301
12 PM	557	12 AM	284

The annual energy cost for the MCA chilled water system cooling system as based on DOE simulation results is \$103,200. Individual components are summarized below and shown in detail on the attached table titled "Existing Operation".

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	92,417	186,049	950	\$22,900
Totals	3,211	478,445	620,566	3,751	\$103,100

DOE Simulation, MCA Chilled Water Plant, Existing

		Chiller			Tower Fan		Col	Condenser Pump	dm	Chilled W	Chilled Water Pump
	Annual	Off-Peak	On-Peak	Annual	Off-Peak	Off-Peak On-Peak	Annual	Off-Peak	Off-Peak On-Peak	Annual	Annual
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh
January	0	0	0	0	0	0	0	0	0		
February	0	0	0	0	0	0	0	0	0		
March	0	0	0	0	0	0	0	0	0		
April	0	0	0	0	0	0	0	0	0		
May	369	23,982	19,785	41	5,108	8,502	27	3,499	089'9		
June	442	68,071	59,135	41	10,784	17,499	27	6,998	12,087		
July	422	66,972	75,300	41	9,870	20,090	27	6,361	13,359		
August	441	76,939	63,923	41	11,339	18,287	27	7,316	12,405		
September	365	51,299	48,917	41	10,016	17,281	27	6,680	12,405		
October	271	13,966	13,958	41	3,966	8,225	27	2,863	0,89		
November	0	0	0	0	0	0	0	0	0		
December	0	0	0	0	0	0	0	0	0		
Totals	2,310	301,229	281,018	246	51,083	89,884	162	33,717	63,616	493	493 278,465

Note: DOE does not provide monthly energy usage quantities for chilled water pumps, only annual, demand # is from Electric Model

FORT MONMOUTH PROJECT COST ESTIMATE PARTIAL FULL CHILLED WATER STORAGE (EC0-11)

								TOTAL
NO.	DESCRIPTION	QTY	UNIT	MATE		LABO		BARE
L				\$/UNIT	COST	\$/UNIT	COST	COST
	Storage Tank 450,000 Gallons	1	Each	\$125,000.00	\$140,000	\$42,000.00	\$42,000	\$182,000
	Storage Tank Diffuser	1	Each	\$23,000.00	\$25,000	\$3,500.00	\$3,500	\$28,500
	Excavation abd Backfill	1	Lot	\$6,000.00	\$6,000	\$18,000.00	\$18,000	\$24,000
4	Insulation	1	Lot	\$15,000.00	\$15,000	\$7,000.00	\$7,000	\$22,000
5	Piping 10" Control Valve	750	Each	\$48.00	\$36,000	\$38.00	\$28,500	\$64,500
6	Control Valve	2	Each	\$5,000.00	\$10,000	\$1,400.00	\$2,800	\$12,800
7	Controls	1	Lot	\$8,000.00	\$8,000	\$8,000.00	\$8,000	\$16,000
	Pump, 40 HP	2	Each	\$4,000.00	\$8,000	\$800.00	\$1,600	\$9,600
9					\$0		\$0	\$0
10					\$0		\$0	\$0
11					\$0		\$0	\$0
12					\$0		\$0	\$0
13					\$0		\$0	\$0
14					\$0		\$0	\$0
15					\$0		\$0	\$0
16					\$0		\$0	\$0
17					\$0		\$0	\$0
18					\$0		\$0	\$0
19					\$0		\$0	\$0
20		<u> </u>			\$0		\$0	\$0
21					\$0		\$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0
22					\$0		\$0	\$0
23					\$0		\$0	\$0
24					\$0		\$0	\$0
25		+			\$0		\$0	\$0
26			-		\$0		\$0	\$0
27		 			\$0 \$0		\$0 \$0	\$0
28 29					\$0 \$0		\$0 \$0	\$0 \$0
30					\$0		\$0 \$0	\$0 \$0
31		-			\$0		\$0	\$0 \$0
32			-		\$0		\$0 \$0	\$0 \$0
33					\$0		\$0	\$0 \$0
34					\$0		\$0	\$0 \$0
35		1			\$0		\$0	\$0 \$0
36					\$0		\$0	\$0
37					\$0		\$0	\$0
38					\$0		\$0	\$0
39					\$0		\$0	\$0
40		1			\$0		\$0	\$0
41					\$0		\$0	\$0
42					\$0		\$0	\$0
43					\$0		\$0	\$0
44					\$0		\$0	\$0
45					\$0		\$0	\$0
46					\$0		\$0	\$0
47					\$0		\$0	\$0
48					\$0		\$0	\$0
49					\$0		\$0	\$0
50					\$0		\$0	\$0
51	OUDTOTAL				\$0		\$0	\$0
L	SUBTOTAL	.					46:22	\$359,400
	OVERHEAD AND PROFIT	ļ			\$24,800		\$61,300	\$86,100
	CITY COST INDEX MULTIPLIER	1						
	DIFFICULTY FACTOR						0/7-000	
	CONTINGENCY				\$27,300		\$17,300	\$44,600
	SIOH(5.5%) & DESIGN FEE(6%)			27,000	AC	29,000	A465 000	\$56,000
	BASE TOTAL COST		<u></u>		\$300,000		\$190,000	\$546,000

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12-Jul-96

Proposed.

Utilize both existing 690 ton chillers to produce and store chilled water during utility off-peak periods when the cost for electricity is lower. Install equipment to store 3,700 ton-hour of chilled water for use during on-peak periods (Table above adds to 6,103 ton/hrs). The storage system will be capable of providing sufficient cooling to reduce the existing cooling peak by 50% (approximately 300 tons (608 tons x 50%). This amount of storage is equivalent to approximately 450,000 gallons of chilled water storage.

During the on-peak period (8:00 a.m. to 8:00 p.m.), the stored chilled water will be utilized to meet a minimum of 50% of the cooling load. The existing chillers, tower, and condenser pump chiller will operate during the on-peak period to meet any additional load above 300 tons. The operation of the chilled water pump will remain unchanged. During the off-peak (8:00 pm to 8:00 am) the 690 ton chillers will operate to meet both building load and chilled water tank charging. The storage system will be used from June to October during the summer electric rate period.

For this analysis, 50% storage was assumed. Therefore, the storage was sized so that during the on-peak period 50% of the peak cooling hour will be provided by the stored chilled water. On cooler days, stored chilled will be capable of providing higher percentages. Use of the chilled water storage system will reduce demand charges. Generating cooling at night also takes advantages of the lower off-peak cost of energy (kWh). A DOE simulation model was performed based upon the above parameters with summarized results shown on the following table. With the new chilled water storage system the on-peak kWh will be shifted to off-peak hours. The table on the following page titled "Partial Chilled Water Storage Hourly Profile" demonstrates the operation of the new system.

The new storage system will be buried on the grounds adjacent to the chilled water building. The existing chillers will be retained and will not require modifications. New piping and controls will need to be added. The annual energy cost for the MCA system will be \$88,300.

DOE Output Partial Chilled Water Storage Hourly Profile

		Building	Chiller	Tank	Tank	
		Load	Load	Release	Charge	Losses
Day	Time	Tons	Tons	Tons	Tons	Tons
Aug 17th	1 am	184	717	0	508	25
_	2	161	695	0	508	25
	3	152	286	0	109	25
	4	138	164	0	0	25
	5	133	158	0	0	25
	6	201	226	0	0	25
	7	340	365	0	0	25
	8	410	127	308	0	25
	9	457	174	308	0	25
	10	475	192	308	0	25
	11	508	225	308	0	25
	12 pm	530	247	308	0	25
	1	538	255	308	0	25
į	2	538	255	308	0	25
	3	507	224	308	0	25
	4	427	144	308	o	25
	5	410	126	308	0	25
	6	374	91	308	0	25
	7	299	51	273	0	25
	8	276	810	0	508	25
	9	251	785	0	508	25
	10	228	762	0	508	25
	11	212	746	0	508	25
	12	197	731	0	508	25
Aug 18th	1 am	186	720	0	508	25
	2	169	703	0	508	25
	3	161	296	0	109	25
	4	147	172	0	0	25
	5	131	156	0	0	25
	6	206	231	0	. 0	25
	7	336	361	0	0	25
	8	413	130	308	0	25
	9	459	176	308	0	25
	10	493	210	308	0	25
ļ	11	525	242	308	0	25
İ	12 pm	531	248	308	0	25
	1	565	282	308	0	25
	2	582	298	308	0	25
	3	554	271	308	0	25
	4	470	187	308	0	25
	5	448	164	308	0	25
1	6	405	122	308	0	25
	7	357	109	273	0	25
ļ	8	329	862	0	508	25
***	9	311	844	0	508	25
	10	293	826	0	508	25
	11	276	810	0	508	25
I	12	259	793	0	508	25

Entech Engineering, Inc.

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15-Jun-96

Partial Chilled Water Storage

kWh

Chilled Water Pump Annual 493 Annual Off-Peak 51,954 5,472 10,182 10,492 10,154 10,577 5,077 kWh Condenser Pump 23,635 1,467 5,500 6,882 3,356 197 6,233 On-Peak 168 28 28 28 28 28 28 28 Annual kW Off-Peak 9,264 21,301 23,108 22,381 19,394 7,240 102,688 kWh Proposed Operation, Partial Chilled Water Storage2, DOE Simulation Output 9,003 8,174 4,257 30,682 1,864 7,131 253 Tower Fan On-Peak kWh 237 Annual k₩ 35,734 103,808 120,430 113,563 81,127 474.653 19,991 Off-Peak kWh 25,445 28,538 32,140 12,257 5,384 104,323 On-Peak Chiller kWh 1,140 181 220 210 219 179 131 Annual ΚW Totals September November Month December February October annary August March April May Inne July

278,465

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	1,140	104,323	474,653	1,976	\$47,900
Tower Fan	237	30,682	102,668	455	\$10,900
Condenser Pump	168	23,635	51,954	258	\$6,500
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Totals	2,038	251,057	815,323	3,640	\$88,200

Construction

The expected construction cost is \$546,000.

Cost.

(See Attached Cost Breakdown).

Material	\$ 300,000
Labor	\$ 190,000
SIOH	\$ 27,000
Engineering	\$ 29,000
Total	\$ 546,000

Savings.

The annual cost savings resulting from the implementation of this project will be \$14,900 (\$103,100 - \$88,200).

Demand kW = 2,718 kW/yr (3,211 kW/yr - 2,038 kW/yr)

On-Peak kWh = 227,388 kWh/yr (486,275 kWh/yr - 258,887 kWh/yr)

Off-Peak kWh = -194,758 kWh/yr (612,735 kWh/yr - 807,493 kWh)

Energy Usage = 111 mmBtu (((227,388 kWh/y - 194,758 kWh/yr) x 3,413 Btu/kWh) ÷ 1,000,000 Btu/mmBtu]

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	1,170	196,906	(193,635)	11	\$12,800
Tower Fan	9	20,401	(12,784)	26	\$700
Condenser Pump	(6)	10,081	11,661	74	\$1,400
Chilled Water Pump	0	0	0	0	\$0
Totals	1,173	227,388	(194,758)	111	\$14,900

Maintenance

Savings.

There is no additional monetary savings due to reduced maintenance. In reality the maintenance cost would probably go up to some degree, for analysis purposes we have assumed no impact.

Discussion.

Payback = 37 years

SIR = 0.4

The expected payback resulting from the implementation of this project is 37 years ($$550,000 \div $14,900$). This ECO is not recommended because the savings do not justify the cost for equipment replacement.

Entech Engineering, Inc.

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92) INSTALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#11 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1 INVESTMENT A. CONSTRUCTION COST \$ 490000.

B. SIOH \$ 27000.

C. DESIGN COST \$ 29000.

D. TOTAL COST (1A+1B+1C) \$ 546000. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 546000. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL

 111.
 \$ 14900.
 13.86
 \$

 0.
 \$ 0.
 16.99
 \$

 0.
 \$ 0.
 17.38
 \$

 0.
 \$ 0.
 17.14
 \$

 0.
 \$ 0.
 13.56
 \$

 0.
 \$ 0.
 15.12
 \$

 \$ 0.
 13.47
 \$

 111.
 \$ 14900.
 \$

 A. ELECT \$134.23 206507. B. DIST \$.00 0. C. RESID \$.00 D. NAT G \$ 7.28 0. 0. E. COAL \$.00 0. F. LPG \$.00 0. M. DEMAND SAVINGS 0. N. TOTAL 206507. 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 0. (1) DISCOUNT FACTOR (TABLE A) 13.47 \$ 0. (2) DISCOUNTED SAVING/COST (3A X 3A1) B. NON RECURRING SAVINGS (+) / COSTS (-) DISCOUNTED SAVINGS(+) YR DISCNT
COST(-) OC FACTR
(1) (2) (3) SAVINGS(+)/ ITEM COST(-)(4) d. TOTAL \$ 0. 0. C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 0. 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 14900. 5. SIMPLE PAYBACK PERIOD (1G/4) 36.65 YEARS 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 206507. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = .38

(IF < 1 PROJECT DOES NOT QUALIFY)

ECO-12 VARIABLE FLOW PRIMARY-SECONDARY CHILLED WATER DISTRIBUTION

Existing.

Currently Building 2700 utilizes a central chilled water system for a portion of its cooling needs. This system was installed during the 1983 renovation under the Major Construction Activities Program (MCA). This system has been referred to as "MCA Chilled Water Plant". As shown in Section 3 of this report the current system consists of the following equipment:

Description	Quantity, Size, Load
Centrifugal Chillers	2 - 690 tons - 538 kW/ea
Cooling Tower	1 - 1,380 Tons - 56 kW
Condenser Pumps	2 - 19 kW/ea
Chilled Water Pumps	2 - 75 kW/ea

The system is presently operated from mid May through mid October. As indicated in Section 5, a DOE hourly simulation was performed. DOE calculated a peak cooling load of 608 tons at 2:00 p.m. on August 18. DOE simulation output can be found in Attachment 8.12. The annual energy cost for the MCA chilled water system cooling system as based on DOE simulation results is \$103,100. Individual components are summarized below and shown in detail on the attached table titled "Existing Operation".

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	92,417	186,048	950	\$22,900
Totals	3,211	478,445	620,565	3,751	\$103,100

DOE Simulation, MCA Chilled Water Plant, Existing

		Chiller			Tower Fan		ŏ	Condenser Pump	du	Chi	Chilled Water Pump	dum
	Annual	On-Peak	Off-Peak Annual	Annual	On-Peak	Off-Peak Annual	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0	0	0
Mav	369	23,978	19,785	41	5,108	8,502	27	3,499	089'9	91	9,638	21,339
June	442	68,049		41	10,784	17,499	27	6,998	12,087	94	19,055	34,579
July	422	66,947		41	9,870	20,090	27	6,361	13,359	94	17,459	36,150
August	440	76,910		41	11,339	18,287	27	7,316	12,405	92	20,086	34,499
September	364	51,288	48,917	41	10,016	17,281	27	6,680	12,405	91	18,054	37,094
October	271	13,965		41	3,966	8,225	27	2,863	089'9	88	8,126	22,386
November	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0
Totals	2,308	301,137	301,137 281,007	246	51,083	89,884	162	33,717	63,616	552	92,417	186,048

Variable Speed Pumping

Proposed Operation, Variable Speed Fumpin	peration, v	ariable Sp	eea rumpu	ng, non	ag, DOE Simulation Output	Culput						
		Chiller			Tower Fan	-	ŭ	Condenser Pump	dun	Chil	Chilled Water Pump	dum
	Annual	On-Peak	On-Peak Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak	Annual	On-Peak	Off-Peak
Month	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh	kW	kWh	kWh
January	0	0	0	0	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0	0	0	0	0
May	369	23,978	19,785	41	5,108	8,502	27	3,499	089'9	9/	3,835	11,798
June	442	68,049	59,131	41	10,784	17,499	27	6,998	12,087	9	7,582	19,118
July	422	66,947	75,296	41	9,870		27	6,361	13,359	90	6,947	19,986
August	440	76,910	63,920	41	11,339		27	7,316	12,405	91	7,993	19,073
September	364	51,288	48,917	41	10,016	17,281	27	6,680	12,405	77	7,184	20,508
October	271	13,965	13,958	41	3,966	8,225	27	2,863	089'9	58	3,233	12,377
November	0	0	0	0	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0	0	0	0	0
Totals	2,308		301,137 281,007	246	51,083	89,884	162	33,717	63,616	482	36,776	102,859

Proposed.

Convert the existing constant flow chilled water system to a variable flow system. This would require the existing system to be converted to a primary/secondary pumping arrangement. The existing 100 hp pumps will be retained and used as secondary pumps with the addition of variable speed controls. Two new pumps and piping would be added in the mechanical room to maintain a constant flow through the chillers. Because of the low head, the new pumps are estimated to be only 15 hp. Using DOE, the above modification was simulated by changing the "Pump Type" from fixed speed to variable speed. The indicated the annual cooling cost for this system would be \$93,900 as shown in the following table.

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	2,310	301,229	281,018	1,987	\$60,700
Tower Fan	246	51,083	89,884	481	\$11,600
Condenser Pump	162	33,716	63,615	332	\$7,900
Chilled Water Pump	493	36,776	102,859	477	\$13,700
Totals	3,211	422,804	537,376	3,277	\$93,900

Construction Cost.

The expected construction cost is \$176,900 (See Attached Cost Breakdown).

Material	\$ 104,100
Labor	\$ 54,600
SIOH	\$ 8,700
Engineering	\$ <u>9,500</u>
Total	\$ 176,900

Savings.

The annual cost savings resulting from the implementation of this project will be \$9,200 (\$103,100 - \$93,900).

Demand kW = 0 kW/yr (3,211 kW/yr - 3,211 kW/yr)

On-Peak kWh = 55,641 kWh/yr (478,445 kWh/yr -

422,804 kWh/yr)

Off-Peak kWh = 83,189 kWh/yr (620,565 kWh/yr -

537,376 kWh)

Energy Usage = 474 mmBtu (((55,641 kWh/y + 83,189)))

kWh/yr) x 3,413 Btu/kWh) ÷ 1,000,000

Btu/mmBtu]

Component	Demand kW	On-Peak kWh/yr	Off-Peak kWh/yr	Energy mmBtu	Cost \$/yr
Chillers	0	0	0	0	\$0
Tower Fan	0	0	0	0	\$0
Condenser Pump	0	0	0	0	\$0
Chilled Water Pump	0	55,641	83,189	474	\$9,200
Totals	0	55,641	83,189	474	\$9,200

Maintenance

Savings.

There is no additional monetary savings due to reduced

maintenance.

Discussion.

Payback

19.2 years

SIR

0.7

The expected payback resulting from the implementation of this project is 19.2 years ($$176,900 \div $9,200$). This ECO is not recommended because the savings do not justify the cost for equipment replacement.

FORT MONMOUTH

PROJECT COST ESTIMATE

Variable Flow Primary-Secondary Chilled Water Distribution (ECO-12)

О.	DESCRIPTION	QTY	UNIT	MATER	IAIS	LAB	OR	TOTAL BARE
U .	DESCRIPTION		0	\$/UNIT	COST	\$/UNIT	COST	COST
4	Primary Pump, 15hp	3	Each	\$2,000.00	\$6,000	\$1,000.00	\$3,000	\$9,00
	Primary Piping	100	If	\$50.00	\$5,000	\$50.00	\$5,000	\$10,00
-2	Secondary Piping	100	if if	\$50.00	\$5,000	\$50.00	\$5,000	\$10,000
3	Mediable Francisco Drives			\$30.00 \$25,000.00		\$2,000.00	\$4,000	\$54,000
4	Variable Frequency Drives	2	Each	\$25,000.00	\$50,000	\$2,000.00		
5	Relocate Existing Pumps w/ Pads	3	Each	\$1,000.00	\$3,000	\$2,000.00	\$6,000	\$9,000
	Controls, Tubing, Valves	1	Lot	\$10,000.00	\$10,000	\$5,000.00	\$5,000	\$15,000
7	Transformers	1	Each	\$5,000.00	\$5,000	\$1,000.00	\$1,000	\$6,000
8	Misc. Electrical	1	Lot	\$2,000.00	\$2,000	\$3,000.00	\$3,000	\$5,000
9			/***		\$0		\$0	\$(
10					\$0		\$0	\$(
11		+			\$0		\$0	\$(
12		 			\$0		\$0	\$(
13		 			\$0		\$0	\$
		 			\$0		\$0	\$
14								
15		.			\$0		\$0	\$
16					\$0		\$0	\$
17					\$0		\$0	\$
18					\$0		\$0	\$
19					\$0		\$0	S
20		 			\$0		\$0	\$ \$ \$ \$
21		1			\$0		\$0	<u>\$</u>
22		 			\$0		\$0	\$
		1	-				\$0	<u>Ψ</u>
23					\$0			\$
24					\$0		\$0	\$
25					\$0		\$0	\$1
26					\$0		\$0	\$(
27		1			\$0		\$0	\$(
28					\$0		\$0	\$
29					\$0		\$0	S
30		 			\$0		\$0	Si
31		+			\$0		\$0	Si
		+			\$0		\$0	Ψ·
32		1						\$1 \$4 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5 \$5
33		1			\$0		\$0	<u> </u>
34					\$0		\$0	\$
35					\$0		\$0	\$
36					\$0		\$0	\$
37				:	\$0		\$0	\$
38					\$0		\$0	S
39		1		:	\$0		\$0	\$
40		1			\$0		\$0	S
41		1			\$0		\$0	\$
42					\$0		\$0	\$
43					\$0		\$0	\$
					\$0		\$0	\$
44		-						
45					\$0		\$0	\$
46					\$0		\$0	\$
47					\$0		\$0	\$
48					\$0		\$0	\$
49					\$0		\$0	\$
50		1			\$0		\$0	S
51		1			\$0		\$0	\$
52					\$0		\$0	Š
							\$0	\$
53		ļļ			\$0			<u> </u>
54					\$0		\$0	\$
55					\$0		\$0	\$
56					\$0		\$0	\$
57					\$0	-	\$0	\$
58		T			\$0		\$0	\$
59		+			\$0		\$0	\$
60		+			\$0		\$0	\$
61		+			\$0 \$0		\$0	`
62		4			\$0		\$0	
63					\$0		\$0	
	SUBTOTAL							\$118,00
	OVERHEAD AND PROFIT				\$8,600		\$17,600	\$26,20
	CITY COST INDEX MULTIPLIER							· · · · · · · · · · · · · · · · · · ·
_	DIFFICULTY FACTOR	 		·				·
	CONTINGENCY				\$9,500		\$5,000	\$14,50
				40 700	99,500	80.500	\$5,000	
	SIOH(5.5%) & DESIGN FEE(6%)			\$8,700	\$104,100	\$9,500	\$54,600	\$18,20 \$176,90

LIFE CYCLE COST ANALYSIS SUMMARY STUDY: MON1
ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) LCCID FY95 (92)
ALLATION & LOCATION: REGION NOS. 2 CENSUS: 1 INSTALLATION & LOCATION: PROJECT NO. & TITLE: FISCAL YEAR DISCRETE PORTION NAME: ECO#12 ANALYSIS DATE: 07-03-96 ECONOMIC LIFE 20 YEARS PREPARED BY: 1. INVESTMENT A. CONSTRUCTION COST \$ 158700.

B. SIOH \$ 8700.

C. DESIGN COST \$ 9500.

D. TOTAL COST (1A+1B+1C) \$ 176900. E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ F. PUBLIC UTILITY COMPANY REBATE \$ 0. G. TOTAL INVESTMENT (1D - 1E - 1F) 176900. 2. ENERGY SAVINGS (+) / COST (-) DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1995 UNIT COST SAVINGS ANNUAL \$ DISCOUNT DISCOUNTED \$/MBTU(1) MBTU/YR(2) SAVINGS(3) FACTOR(4) SAVINGS(5) FUEL

 474.
 \$ 9200.
 13.86
 \$ 1275

 0.
 \$ 0.
 16.99
 \$ 1275

 0.
 \$ 0.
 17.38
 \$ 1275

 0.
 \$ 0.
 17.14
 \$ 1275

 0.
 \$ 0.
 13.56
 \$ 1275

 0.
 \$ 0.
 15.12
 \$ 1275

 474.
 \$ 9200.
 \$ 1275

 A. ELECT \$ 19.41 127517. B. DIST \$.00 C. RESID \$.00 D. NAT G \$ 7.28 0. 0. 0. E. COAL \$.00 F. LPG \$.00 0. M. DEMAND SAVINGS 0. 127517. N. TOTAL 3. NON ENERGY SAVINGS(+) / COST(-) A. ANNUAL RECURRING (+/-) 0. (1) DISCOUNT FACTOR (TABLE A) 13.47 (2) DISCOUNTED SAVING/COST (3A X 3A1) 0. B. NON RECURRING SAVINGS (+) / COSTS (-) SAVINGS(+) YR DISCNT COST(-) OC FACTR (1) (2) (3) DISCOUNTED SAVINGS(+)/ COST(-)(4) ITEM \$ 0. d. TOTAL C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+)/COST(-)(3A2+3Bd4)\$ 4. FIRST YEAR DOLLAR SAVINGS 2N3+3A+(3Bd1/(YRS ECONOMIC LIFE))\$ 19.23 YEARS 5. SIMPLE PAYBACK PERIOD (1G/4) 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 127517. 7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = .72

(IF < 1 PROJECT DOES NOT QUALIFY)

7.0 CONCLUSION

7.1 General

Seventeen (17) ECOs or Options to ECOs were evaluated in this report. Of these ECOs, the first one and it's five options relate directly to the decentralization of Building 2700 Central Boiler Plant. The remaining eleven ECOs cover various HVAC type opportunities involving heating and/or cooling.

A summary of ECOs in the order presented in Section 6 is shown in Table 7.1.1. Included with each ECO listed are the construction costs, the annual energy savings, the annual maintenance savings, the LCCID payback periods and SIR.

ECO Summa

ECO#	ECO Description		Implement	ation Costs
		Construction Cost	SIOH Cost	Design Cost
1	Steam Decentralization, Base Case	\$1,199,000	\$67,000	\$73,000
1A	New Steam Boilers in Building 2700			
1B	New Hot Water Boilers for Cleanroom	\$1,229,000	\$69,000	\$74,000
1C	Operate Cleanrooms with MCA Hot Water			
1D	Electric Domestic Hot Water Generator			
1E	Decentralize Domestic Hot Water	\$1,238,000	\$69,000	\$75,000
2	Building 2700 MCA System ±5°F Temp. Setback Control	\$46,200	\$2,500	\$2,800
3	Reduce Building Infiltration	\$86,000	\$4,700	\$5,300
4	Replace Existing Central Chillers	\$258,900	\$14,000	\$16,000
5	Convert Specific Air Cooled Chillers to Water Cooled	\$249,500	\$14,000	\$15,000
6	Free Cooling	\$80,400	\$4,000	\$5,000
7	2-Speed Fan Operation	\$26,600	\$1,500	\$1,600
8	Replace DHW Recirculation Pumps			
9	Automated MCA HW Temperature Reset	\$12,500	\$700	\$800
10	Full Chilled Water Storage	\$800,000	\$44,000	\$48,000
11	Partial Chilled Water Storage	\$490,000	\$27,000	\$29,000
12	Variable Flow Primary-Secondary Chilled Water Dist.	\$158,700	\$8,700	\$9,500



mmary for Fort Monmouth Table 7.1.1

osts				Annua	l Savings			LCCID	LCCID
ign st	Total Cost	Gas mmBtu	Gas Cost	Electric mmBtu	Electric Cost	\$/mmBtu	Recurring Maintenance	Payback	SIR
.000	\$1,339,000	36,685	\$267,000	. (67)	(\$1,089)	\$16.25	\$190,000	2.9	5.32
	\$0	-							
.000	\$1,372,000	37,525	\$273,000	(119)	(\$2,989)	\$25.12	\$190,000	3.0	5.25
	\$0								
	\$0								
000	\$1,382,000	39,235	\$285,510	(984)	(\$19,661)	\$19.98	\$170,000	3.2	5.00
800	\$51,500	623	\$4,500	1,887	\$34,200	\$18.12		1.3	10.7
300	\$96,000	1,329	\$9,700	(2)	\$0	\$0.00		9.9	1.7
000	\$288,900			1,018	\$25,066	\$24.62		11.5	1.2
000	\$278,500			274	\$7,367	\$26.89		37.8	0.4
000	\$89,400			183	\$4,408	\$24.09		20.3	0.7
500	\$29,700			141	\$2,600	\$18.44		11.4	1.2
	\$0								
300	\$14,000	351	\$2,500					5.5	3.1
)00	\$892,000			420	\$36,200	\$86.19		24.6	0.6
)00	\$546,000			111	\$14,900	\$134.23		36.7	0.4
500	\$176,900			474	\$9,200	\$19.41		19.2	0.7



The lists of the recommended or non recommended ECOs are shown in the following sections. In addition to the summary information for each ECO a comment is added to each ECO in the two lists which relates to Entech's opinion on which category the project falls under. Below is the criteria that is used to categorize the report's findings (ie. ECIP, Non-ECIP etc.). Qualifying for ECIP requires a project to have a low limit for construction, and an acceptable payback and investment ratio. In addition it cannot be an operation and maintenance project which is defined as:

O & M Energy Projects: An O & M Energy Project is one that results in needed maintenance and repair to an existing facility, or replaces a failed or failing existing facility, and also results in energy savings.

The following criteria is the basis to recommend or not-recommend ECOs for this report. The criteria is from the scope for this project which is included in Appendix 8.13

Qualifications for Project Recommendation:

1. **ECIP:** Projects that have \$300,000 construction cost, SIR > 1.25, payback < 10 years.

Non-ECIP: Projects that do not meet 1, or they fall under 2 or 3. (If an ECO is recommended and does not fall under 2 or 3, then it will be considered Non-ECIP General)

- 2. **O & M Projects (by definition):** \$300,000 construction cost, SIR > 1.25, payback < 10 years.
- 3. **Low Cost/No Cost Projects:** Fort Monmouth can implement with their own resources

4. **Non-feasible:** ECOs that are not recommended based on findings for 1, 2, and 3, or because of reasons stated in the individual ECO discussion section and/or the not recommended table.

7.2 Recommended ECOs

Of the seventeen (17) ECOs addressed, four (4) have been found to be acceptable, and they are listed in Table 7.2.1. They are listed from highest to lowest savings to investment ratio.

Recommend ECO List for Fort Monmouth Table 7.2.1

	ECO #	Description	Total Cost	Annual Energy Savings	Annual Maint. Savings	LCCID Payback	LCCID SIR	Comment
1	2	Bldg 2700 MCA System ±5° Temp. Setback Control	\$51,500	\$38,700	\$0	1.3	10.70	Non-ECIP (LC/NC)
2	1	Steam Decentralization	\$1,339,000	\$265,911	\$190,000	2.9	5.32	ECIP
3	9	Automated MCA HW Temp. Reset	\$14,000	\$2,500	\$0	5.5	3.10	Non-ECIP (LC/NC)
4	3	Reduce Building Infiltration	\$96,000	\$9,700	\$0	9.9	1.7	Non-ECIP (LC/NC)
		Total	\$1,500,500	\$316,811	\$190,000	4.9		

7.3 Non-Recommended ECOs

Thirteen (13) ECOs out of the original seventeen (17) are not-recommended for implementation. Those ECOs were not recommended ECOs for various reasons including the criteria in Section 6.1. The not-recommended are listed in Table 7.3.1. They are categorized in the same order as they were presented in Section 6. Omitted from that list are the recommended ECOs found in Section 7.2. Included in the table are ECO descriptions, savings, maintenance savings (costs), LCCID payback periods and SIRs and a general comment about the ECO.

Not Recommended ECO List for Fort Monmouth Table 7.3.1

No.	Description	Total Cost	Annual Energy Savings	Annual Maint. Savings	LCCID Payback	LCCID SIR	Comments
1A	New Steam Boilers in Bldg. 2700	\$0	\$0	\$0	0	0	Not required.
1B	New Hot Water Boiler for Cleanroom	\$1,372,000	\$270,011	\$190,000	3.0	5.25	Could replace the base case if hot water is desired.
1C	Operate Cleanrooms w/MCA Hot Water	\$0	\$0	\$0	0	0	Not Feasible.
1D	Electric DHW Generator	\$0	\$0	\$0	0	0	Higher energy cost for same application.
1E	Decentralize DHW	\$1,382,000	\$265,849	\$170,000	3.2	5.00	Payback/SIR not as good as ECO-1
4	Replace Existing Central Chillers	\$288,900	\$25,066	\$0	11.5	1.2	Savings can not justify equipment.
5	Convert Specific Air Cooled Chillers to Water Cooled	\$278,500	\$7,367	\$0	37.8	0.40	Savings can not justify equipment.
6	Free Cooling	\$89,400	\$4,408	\$0	20.3	0.70	Savings can not justify equipment.
7	2-Speed Fan Operation	\$29,700	\$2,600	\$0	11.4	1.2	Savings can not justify equipment.
8	Replace DHW Recirculation Pumps	\$0	\$0	\$0	0	0	Not required.
10	Full Chilled Water Storage	\$892,000	\$36,200	\$0	24.6	0.60	Savings can not justify equipment.
11	Partial Chilled Water Storage	\$546,000	\$14,900	\$0	36.7	0.40	Savings can not justify equipment.
12	Variable Flow, Primary/Secondary Chilled Water Dist.	\$176,900	\$9,200	\$0	19.2	0.70	Savings can not justify equipment.

Attachment 8.1

Maintenance Equipment List for Building 2700

16-Jun-93

RECURRING WORKLOAD

HTER CENTER AIR CONDITIONING

LOCATION	HAKE	HODEL	SERIAL NUMBER	SIZE	CORROSIEN CONTROL
OA LEVEL:					
OA RM 400 (C6) Cond on groun (Air bandler	NA d-eastside of bldg in MR GA 400)	NA	NA	25	·
	NCQUAT NCQUAY AIR HANDLER COND	ALPO45C LHL 122 DH	5RD0700400 3RC00 525-04	25	0
CAFETERIA OFC CAFETERIA OFC	CARRIER CARRIER	38GS036350 38GS036350	U121639 U121648	3	
IST FLOOR:					
1B 110 1B 124 1B 128 1B 141-A 1B 202 1E 205A	CEILING MATE McQUAY COMFORT AIR FKG UNIT CHRYSLER CARRIER TRANE COND	CMW180-1 VSC040E 51016-13A 1005 50BA006510 SAHE E306-E	1330 57D3505051 18007199541 NA 418G29457 C22H-66350	2 40 10 5 5	9
MEZZANINE:					
AUDITORIUM AUDITORIUM	McQUAY AIR HANDLER (1) McQUAY AIR HANDLER (2)	AHR 046CD LSL 214CV-2 LSL 214CV-3	E300531 996284020 996254	46	0,1,0,7
2D FLOOR:					
2C 331 2C 325,TOWER 3 2D 337	CHRYSLER TRANE HIDBAWAY 9KG UNIT	3725-01R SWUB-3756-8 MDXW/CZ(PN 531901)	52A7307 J89E12237 68979-371	25 7.5 2	0
3DE FLOOR:					
3D 114 (COOLING TOWER 1)		WZW H-500 TFC-011 W2WH-1500 THC-001			0
4TH FLOOR:					
4C 333 (Condenser on a		3711-0LR	7E00229	12	
4C 336 (Condenser on r		1209-03R	B223952	10	
MACHINE ROOMS:		- *			
MR 13 REFRO	AC #1 COMPRESSOR & AIR H	ANDLING UNIT		10	J

FAGE 1 MITTER CENTER A.C.

RECURRING WORKLOAD

MIR COMPRESSOR UNITS

LEDGEND:

EH = ELECTRIC HEAT

NEH = NO ELECTRIC HEAT

BLDG										
HUMBER	LOCATI	CR MANUFACTUREP	SERIAL NUMBER	HODEL NUMBER	TAG	NO.				
906		QUINCY	12-100-516391	N/A	•		DRT	SPRINKLER	STSTEN	(BH)
975		guinct	13-4-207668	N/A		397		SPRINKLE		
975		QUINCY	18-4-178486	N/A		196		SFRINKLES		
1000		SPEED AIR	06051	463449		410		SPRINKLER		
1976		SPEED ALR	021187L-034173	32419F						- (,
1103		SPEED AIR	J40187L	092981			DRY	SPRINKLER	SYSTEM	(NEE)
1105		GENERAL	4776	45K82-1T		.=		SPRINKLER		
1120		ge zouipment	56979WL	10825		408				(
1122		NAPA	4313	82-278-EHAT						
1132		NAPA	1307	32-273-HAT						
1150		GENERAL CAPLE	RB-5023	3100 C.G.		431				
1150		PURE GAS	D239	1500		132				
1206		A.C.F	1185-4443	ACP-COS-03ED3		434			-	
1209		INGERSOLL RAND	30 T-59 0769	2-23401						
1210		QUINCT	5015943	PF102AD						
122G		ALE STREAM	396540	20IT		135				
1220		QUIRCY				301				
2000		DATTON	RG00335A	9K456A		143		SPRINKLER		
2000		CRAFISHAN	1.5 HF 12 GAL	36MS0			DRY	SPRINKLER	System	(NEH)
2000		JOHNSON SYSTEM		32-15-650990		142				
2502		DAYTON	15924 K82	22781		136		SPRINKLER		
2593		DAYTON	15924 J34	32781		137		SPRINKLER		
2504 2506		DAYTOR	15924 K82	32781	4	133	DRT	SPRINKLER	System	(BE)
2506		ITT FNEUMOTIVE HAGNA FORCE	160639P	GH-613						
2506			207243	644100-14						
2507		DAYTON AMERICAN AIR COMP	15924 D84	32781	-	139		SPRINKLER		
2525		SPEED AIR	20407	38114	4	40	CRT	SPRINKLER	STSTEM	(H2)
	·	IEGERSOLL RAND	30 7 287187	3 Z495A- 2				ين		
		FURE GAS AIR DRYER		242D7.5 1500	•					
		INDUSTRIAL AIR	6085	C1023E120H						
		INDUSTRIAL AIR	6095	C1023B120H						
1700		DEVILEISS	E1582							
	1E 124		216-33-294317	BDP5006 216-36	1	07				
2700		GEAIR CO.	621640	410-30		87 98				
2704		TORTHINGTON	1J644	ZT1		58 46				
2705	- .	ROBERTSHAW	718375L	106		46 44		4	<u>.</u>	
			441 44	140	4	44				

RECURRING WORKLOAD

EXHAUST VENTILATORS (MYER CENTER, BLDG 2700)

KIN PACTOR KINETIE SCRUBERR HEAR PLATFORM #4 AND TOWER #2
SIZE F SER-Y-69042 - MOTOR PACEMAKER MOD 193 551-1 TYPE CE 48

PASSENGER ELEVATOR #2 - EV CENTRI VENT HOD - MISSING; SER - MISSING

EV FLATFORM WEST 17 DUALL INDUSTREIES INC. OWOSSO, MICHIGAN SERIAL \$5228

TOTAL NUMBER OF EXHAUST VENTILATORS AT MYER CENTER: 132

FWS 2: AIR CONDITIONING 16 JUNE 1993

RECURRING WORKLOAD

EXHAUST VENTILATORS (HYER CENTER, BLDG 2700)

UNIT	SWITCH LOCATION	FAN LOCATION	NGTOR HP
BV #124	4D 304	STATION \$9	0.25
BV .#125	4D 336	STRAGLER	1.25
BV #126	MR #43	STATION #7	0.75
EV #127	MR \$43	STATION 48	0.75
EV \$129	MR #44	STATION #11	0.75
EV #129	HR #44	STATION \$10	0.75
EV \$130	MR #45	STATION #15	0.75
EV #131	HR #45	STATION \$16	0.75
EV #132			

EV - GENERAL RESOUCRE HOD E18245N - SER \$208448 EXHAUST CANOPY \$9

AIR SHAFT MEAR EXHAUST CAMOPY 9 % 7 GREEN HECK MOD SWB 16-20 - SER 36007507

EXHAUST CAMOPY \$2 - GENERAL RESOURCE MOD BIB132M - SER 208446 - ID \$6

EXHAUST CANOPY \$2 - GENERAL RESCURCE MOD BIB122J - SER 198447 CERTRI VENT - MOD QE 17E - SER THA 198213

EXHAUST CARGET #8 - GENERAL RESOURCE NOD BIE122L - SER 208445

CAROPY #8 - AIR SHAFT NEAR EXHAUST GREEN HECK MOD SWB-16015 - SER 36C07505

SXHAUST CAMOPY \$6 - CENTRI VENT MOD GE 245K - SER THA299220 ID 15 CENTRI VENT MGD GEL 000 - SER SHA 195251 GREEN HECK MARKEF-4 MOD SUE-16-20 - SER 36007504

RECURRING WORKLOAD

EXHAUST VENTILATORS (MYER CERTER, ELDG 2700)

UNIT	SWITCH LOCATION	FAN LOCATION	HOTOR HP
EV #90	1E 308 1B 308 1E 308 1E 307 SUE-STATION 1E 312 1E 316 1E 400	STATION #9	3
EV #91	1B 308	STATION #9	2
EV #92	1E 308	STATION #9	a 75
BV #93	1E 307	STATION #9	2
EV 194	SUE-STATION	1ST FLOOR	•
EV #95	1E 312	1E 312	
EV 196	1E 316	STATION #9	0.5
EV #97	1E 400	STATION 12	0.5
BV 198	SUE-STATION	BASEMENT	1.5
EV #99			
EV #100		٠.•	
	18 504	STATICH #16 STATION #6 STATION #6 STATION #7 STATION #8 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9 STATION #9	0.5
BV #102	2D 210	STATION 46	0.25
BV #103	2D 210	STATION #6	0.25 0.5 0.5 0.25
EV \$104	2D 209	STATION #6	1.5
BV #105	2C 215	STATION #7	0.25
EV #106	2C 305	STATION #8	0.166666
EV #107	2D 306	STATION #9	0.166666 0.25 0.5
EV #103	2D 310	STATION #9	0.5
EV \$109	2D 310	STATION #9	0.166666
EV #110	2D 310	STATION #9	0.166666
EV #111	2D 309	STATION #9	0.75
BV #112	2D 309	STATION #9	0.25
	2D 309	STATION #9	0.5
EV #114	TO SET B.W.	2C 321 D.R.	
DA ATTT	3D 309	3D 309	
EV #116			
	3D 326	STATION \$10	ŷ.5
BV #118		STATION #15	0.25
EV #119		STATION \$14	0.05
EV #120		STRAGLER STATION #6	3.75
BV #121		STATION #6	0.25
BV #122	4D 213	STRAGLER STATION #8	
BV #123	4D 301	STATION #8	0.232233

RECURRING WORKLOAD

EXHAUST VENTILATORS (NYER CENTER, ELDG 2700)

UNIT	SWITCH LOCATION	PAN LOCATION	HOTOR HE
	4C 139	STATION #1	1
	. 4D 103D	STATION #1 STATION #1	0.333333
	4D 134	STATION #4	0.75
	MR #41	STATION #1	2.5
	MR #42	STATION #4	
	BR LATRINE	STATION #10	
	HR #12	HR #12	0.05
	MR #12	MR #12	5
	1E 208	STATION #6	5
	18 205	STATION #6	
	18 20£	CRINTON A.	5
	1B 205	STATION \$6	0.333333
	1E 267	STATION #6	0.04
	4D 205	STATION #2	2.5
	1E 112	STATION #2	1.5
	2C 141	STATION #6 STATION #6 STATION #2 STATION #2 STATION #5 STATION #5	2
	2C 143	STATION #5	0.5
			0.25
EV #69	MENS LATRINE (4D 301)	STATION #8	1.5
EV #71	MENS LATRINE (4D 501)	STATION #16	1.5
EV #71	HENS LATRINE (1E 313)	STATICH #9	0.75
	MENS LATRINE (OA 411)	STATION #14	0.75
EV #75	OA 330	STATION #11	
BV #76	OA 230	STATION #11 STATION #11	2 0.75
EV #77	CA33SE	STATION \$11	0.5
3V #75	OA 330 OA 330 CA333E CA333E KITCHEN E.S. SUE-SYATION 1E 211	STATION #11	0.75
BY #79	KITCHEN E.S.	STATION \$13	7,5
PM 102	SUE-STAFIGN	EASEMENT	1.5
		IE 211	
	1E 211	STATION #7	3
EV #85 EV #86		STATION #7	3 0.333333 2
EV #27		STATION #7	3
BV 499		STATION #8	1
EV \$89	TE 227	STATION #9	2

RECURRING WORKLOAD

EXHAUST VENTILATORS (MYER CENTER, ELDG 2700)

UNIT	SWITCH LOCAT	ION	FAN LOCATION	MOTOR HP
EV #1	HENS LATRINE	(4TH FLOOR)	STRAGLER	2
BV #2	MENS LATRINE	(4TH FLOOR)	STATION #4	1
BV 17	REFRODUCTION		STRAGLER	•
EV #9	3C 207		STATION #5	0.5
EV #10	2C 135		STATION #4	0.333333
SV \$11	2C 133		STATION #3	0.5
EV #12	2D 129E		STATION #3	0.333323
EV #13	2D 129A		STATION #3	0.333333
EV \$14			STATION #3	0.333333
	2D 135		STATION #3	0.333333
EV #16			STATION #3	2
EV #17			STATION #3	0.333333
EV #18			STATION #5	0.323333
	3C 201		STATION #5	0.333333
BV \$20			STATION #5	0.333333
BV #21			STATION #4	2
	2C 207		STATION #6	2
EV #23	2D 205		STATION #6	0.333333
EV #24			STATION #6	
BV #25			STATION #6	3
EV #26			STATION #5	1.5
BV #27			STATION #5	1.5
EV #28 EV #29			STATION #5	1.5
EV #30				0.333333
EV #31			STATION #5	0.333333
BV #32			STATION 45	0.333333
BV #33			STATION #5	0.333333
EV #35			STATION #5	1
EV #37			STATION #4 STATION #5	1.5
	4D 201		STATION #5	1
EV #39			STATION #4	1 0.5
EV #40	4C 139		STATION #4	1.5
EV #41	4D 132		STATION #4	0.333333
EV 442	4D 134		STATION #4	0.222222
BV #43	4D 130		STATION #3	1
	4C 129		STATION #3	1
	4C 131		STATION #3	0.333333
	4C 113		STATION #2	0.223333
	4C 110		STATION #2	V.333333
	4C 109E		STATION #1	0.333233
BV #49	4D 103		STATION #1	2

PWS 1: ALE CONDITIONING 16 JUNE 1993

RECURRING WORKLOAD

SUFPLY VENTILATORS (MYER CENTER, BLDG 2700)

URIT	CONTROL LOCATION	PAN LOCATION	HP FAN HOTOR
SV #1	RM 1E 114	RM 1E 114	1
SV #2	RM 1E 1G8	RM 1B 108	2
SV #3	RM 1E	RM 1E 129	3
SV #13	EOILER ROOM	EOILER ROCH	1.5
SV #14	EOILER ROOM	BOILER ROCH	1.5
SV #15	BOILER ROOM	BOILER ROOM	1.5
SV #16	BOILER ROOM	EOILER ROOM	1.5
SV #18	RM 1B 2G6	RM 1E 206	3
SV #19	RM 1E 206	RM 1B 205	1
SV #23	RN 0A 330	RM OA 230	1
SV 25	RM 1E 211	RM 1B 211	1
SV #26	RM 1B 302	RM 1B 302	1
SV #27	RM 1E 30S	RM 1E 308	1
SV #29	MEN'S LATRINE	MEN'S LATRINE	1
SV #33	HN 2C 317	MR #23	1.5
SV \$37	RM 3C 307	MR #33	5
SV #41	RM 4C 331A	RM 4C 331A	5
SV #42	RM 4C 4G3A	RN 4C 403A	5

TOTAL NUMBER OF SUFFLY VENTILATORS AT MYER CENTER: 13

RECURRING WORKLOAD

COOLING TOWER LOCATIONS

EL! Nui		LOCATI	CN			HAKE		SERIAL NUMBER	HODEL NUMBER	TONHAGE	UNITS
	283					MARLET		4415	4777	7.5	
	291					MARLEY			46752022	30	
	500					BARTINORE	ATE COTT.		323605-D	- •	
	552					MARLEY	4412		4715-338		
	314					HARLEY			47201228		
	1207							867527	LST-10-181		
	1207 N					MARLEY			4765-930	30	
	1207 S	-				HARLEY			4725-611		
	1212					HALSTRAD	A MITCHELL			25	
	1015		n Nar.	ر چارونو سند سهارتونون		RECOLD	engeneren. Spanier	QDE2520	103429		***
3	2700	ROCE		eren -	<i></i>	THERMAL C	ARE, HATER		•		COOLING TOWER
- 4			COIL	500			000 SERIES				
	2706	ROCF				THERMAL C	ARE/MAYER			200	COOLING TOWER
,							000 SERIES				
- 1	2700	ROOF				EACTIMORE	AIR			211	COCLING TOWER
1			COIL	633 (JPH						
:	2700	ROOF				PACTINORE	AIR	24160	791560D	211	COOLING TOWER
₹ 			COIL	633 (FH						
1	2706		•	• • •		BALCCTIKO	RE AIR COLL	4-2419C	3242-10-D	200	e general e e e e e e e e e e e e e e e e e e e
Nac.							(4 CELLS)		* * * .		ar ar ar ar ar ar ar ar ar ar ar ar ar a
	2708					ealtimore	AIR COIL	35-6992D	PAT-250	240	
	2713					BALTINORE		39400765	3268 30NS	1950	
							(3 CELLS)				
	9040					HARLEY		2413	4429	50	
	9042					ACQUA TOW	R COOLING	TOWER	4842 1079C	50	
	•										

TOTAL NUMBER OF COOLING WATER TOWERS: 19
TOTAL TOWARGE FOR COOLING WATER TOWERS:

1,004.50

FWS: EBATING, VENTILATION, AIR CONDITIONING AND REFRIGERATION

16-Jun-93

RECURRING WORKLOAD
MYER CENTER
AIR CONDITIONING
FOR
COMPUTER ROOM FACILITIES
(MONTHLY VISITS)

ROOM/LOCATION	1	HANUFACTURER	SERIAL NUMBER	SIZE MODEL NUMBER	ID	# PUMPS
4C 405	AIR SHAFT NEAR BH CANOFT #8	LIEBERT VOLTAGE 460, PH3	104472D	13 FE 192GA00	AC-14	
4C 405	SH CANOPY #2	LIEBERT VOLTAGE 460, PH3			AC-19	
4C 405	EH CANOPY #2	LIBERT VOLTAGE 460, PHE			AC-15	
4C 405	EH CANOPY #2	LIEBERT DRY COOLER			DC #19	
4C 405	EH CANOPY #2	LIBEERT DRY COOLER	85090071	DSO 260A	DC #15	
40 417	AIR SHAFT NEAR BH CANOPY 19				AC17	
4C 417	AIR SHAFT NEAR EH CANOFY #9	LIBERT VOLTAGE 460, PH3	1044726	13 FE 192G-A00	AC18	
4C 417	AIR SHAFT NEAR EH CANOPY #9				AC16	
40 417	AIR SHAFT NEAR BH CANOFY #9	& LIBEERT DRY COOLER	85090063	DDO 112A	#1ć	1
4C 417	AIR SHAFT NEAR EH CAROPY \$9				‡ 18	1
	AIR SHAFT NEAR BH CAROPY #9					1
4D 204		EDFAC	66000-001A	9 CDIW-09	•	
4D 204		BDFAC	65907-001A			
4D 268#			91-1295A	16 DAGD-2034		
4D 210#		DATA AIRE	91-0236A	5 DAGD-0634		
4D 214#		DATA AIRE	91-0235A	5 DAGD-1034		
# DRY COGLER	PLATERON NO. 7	BONH	TRC 1820	DFS0403G		
4D 308	CCGL TOWER #4	LIRBERT	P-13522 LR-253122	9 CUU9W		
4D 324	EH CANOFT #8	LIEBERT DRY COOLER	85090070	DDO 260A	DC#10	1
4D 324	BH CANOPY #8	LIEBERT VOLTAGE 460, PH3	104472B	13 FE 192G-A00	AC-10	
4D 326	ZE CANOFT #8	LIBBERT VOLTAGE 460, FH3	1044721	7 FE 11GG-A00	AC-9	
4D 326	SH CANOFY #8	LIEBERT DRY COOLER	85090068	DSO 174A	DC 9	1
4D 329	EH CANOPY #8	LIBERT DRY COOLER	35090067	DSO 174A	DC#11	1
4D 323	SH CANOPY #8	LIEEERT	104472H	7 FE 11GG-A00	AC-11	
4D 330		LIEEERT	1044 72K	7FE 110G-A00	AC-12	
4D 330	SH CANOPY #8	LIEBERY DRY COOLER	85090064	DSO 174A	DC#12	1
MR 33		YORK	E0199161	60 LCH360A23PA		

12 Air handlers - one in Rm 3C 321; one A/H/U in MR 33)

TOTAL NUMBER OF 31
TOTAL TOWAGE: 410
TOTAL NUMBER OF 16

RECURRING WORKLOAD

TRANE CENTRAVAC UNITS, ELDG 2706 AND AIR HANDLERS, BLDG 2700 (MYER CENTER)

LOCATION	HAKE	NODEL NUMBER	SERIAL HUMBER	UNITS
THIRD FLO	OCR:			
	TRANE CLIMATE TRANE CLIMATE CENTURI MASTER CENTURI MASTER	S2B000014 S2B000014 NA NA	K83C86109 K83686108 NA NA	AHC-1A AH3-1 AH3-1 AHC-1A
!	TRANE CLIMATE FRANE CLIMATE CENTURI MASTER CENTURI MASTER	S20148 S20148 ME137K ME137K	K83C86110 K83C86111 NA NA	AHU-3-2 AHU-3-2-A RF-3-2 RF-3-2-A
	TRANE CLIMATE ENTURI MASTER	S2B000014 XB137K	Ka328112	AH-3-3 RF-3-3
C T	RANE CLIMATE ENTURI MASTER RANE CLIMATE ENTURI MASTER	S2014B0 XB137K S2014B0 XB137K	K83C36114	AHU-3-5 RF-3-5 AHU-3-5-A RF-R-3-5-A
ROOF:				
ROOF CI ROOF TI ROOF CE ROOF CE ROOF CE ROOF TR ROOF CE ROOF TR ROOF CE ROOF TR ROOF CE	RANE CLIMATE HANGER RANE CLIMATE HANGER HANGER HANGER HANE CLIMATE HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER HANGER		K83C36116 TH298222 E832C36117 TH223217 K83C36118 THA298223 K83C36119 THA298218 K836120 THA298219 K83C121 THA298224	AHU-R-1 RF-R-1 AHU-R-2 RF-R-2 AHU-R-3 PF-R-3 AHU-R-4 PF-R-4 AHU-R-5 RF-R-5 AHU-R-6 RF-R-6

FWS: HEATING, VERTILATION, AIR CONDITIONING AND REFRIGERATION

RECURRING WORKLOAD

MYER CERTER

AIR CONDITIONING

FOR

COMPUTER ROOM FACILITIES

OMPUTER ROOM FACILITIES (MONTELT VISITS)

ROOM/LOCATION		MANUFACTURER	SERIAL NUMBER	SIZE	MODEL NUMBER	ID	# PUMPS
C4 (Bast side of 2700) (Air handler Rm 1B 33	N/A 22 ceiling)		N/A	15	N/A		
OA334 (FRONT)		ERT DRY COOLER	85090073		DSO 174A	DC 1	
OA334 (PRONT)	LIEB	ERT DRY COOLER	104472A	13	PE 192G-A00	AC 1	
OA336 (FRONT)	LEIE	ERT DRY COGLER	85090149		DSO 260A	DC 2	
OA336 (PRONT)	LIEB LEIB LIEB	ERT DRY COOLER	104472J	7	FE 1105-A00	AC 2	
2C 106	DATA	c	025PD009	5	CCT-06WH		
2C 235 TOWER #4	LIBE	ERT	P03660		CU 69W		
2C 405 TOWER #4	DATA	C	3601D006		CCT-20W2		
2C 407 TOWER \$5	DATA	c	3601D005		CCT-20W2		
3C 141 (Condenser	on reof) TRAN	E	C81C29883	6	RAVC-B626A		
3C 143 CCCL TOWER	#2 LIBE	ert	108567A	ī	FH86W-C00		
3D 402 BH CANOPY I	s Libb	ERT DRY COOLER	35050742		DSO 174A	‡ 4	1
3D 402 EH CANOFT I		ERT DRY COOLER	85050741		DSO 174A	‡ 5	1
3D 402 EH CANOPY I	8 LIEB	ERT VOLTAGE 460, FH3	103881A	7	PE 11060-400	‡ 4	
3D 401 EH CANOFY I	E LIEB	ERT VOLTAGE 460, PH3	1038818	7	FE 11060-A00	‡ 5	
3D 404 EH CANOPY	2 LIEB	ERT CRY COOLER	85050771		DSO 260A	RF-3-3	1
3D 404 EH CANOFY	1 LIEP	ERT VOLTAGE 460, PH3	103881F	13	PR 192G-A00	3 .	
3D 406 BH CANOPY A	10 LIEB	ERT VOLTAGE 460, FH3		7	FE 11GG-A00	2	
3D 4GE BH CANGEY	10 LIEE	BRT DRY COOLER	85050740		DSO 174A	#RF-2-2	
3D 406 BH CANOPY 4	12 LIBE	ERT DRY COOLER	85050632		DSO 174A	#RF-1-1	1
3D 406 EH CAROFY	12 LIEE	ERT VOLTAGE 460, FHE	103831C	7	FR 11GG-A00	‡ 1	
3D 409	LIEB	ERT	103881	7	FE116G	10	1
3D 410 BH CANGET :	II LIEE	BRT VOLTAGE 460,FH3	103851G	13	PE192G-A00	9	
3D 410 EH CAMOPY	12 LIEB	BRT DRY COOLER	35050772		DSO 260A	19	1
3D 412 BH CANOPT 4		BRT DRY COOLER	85050775		DSO 310A	#8	1
3D 412 EH CANOPY :	10 DATA	C VOLTAGE 460, PH3 C VOLTAGE 460, PH3	103891J		FE240G-A00		
3D 412 BH CAROFT 4	19 DATA	C VOLTAGE 460, PE3	1038814	17	FB204G-A00	9	
3D 412 BH CANOFY 4	9 LIKE	ERT DRY COOLER	85050773		DSO 310A	‡ 6	
4C 205*		AIR	91-1296-A	9	DAGA 1032		
4C 209*	DATA	AIR					
4C 211'							
4C 213*							
ORY COOLER PLATFORM #7		DRY COOLER	TRC 1819		DFS0403G		
	NBAR SE CAROPT #8 LIBE		85090093		DDO 260A	‡14	1
		C VOLTAGE 460, PH3	104U72C	13	FE 192GA00	AC-13	
4C 405 AIR SHAFT 8	NEAR EH CANOFY \$8 LIEB	ERT DRY COCLER	25090120		DDO 260A	DC#13	1

16-Jun-93

RECURRING WORKLOAD

RECURRING WORKLOAD

MYER CENTER AIR CONDITIONING FOR COMPUTER ROOM FACILITIES

C4	SEE COMPUTER ROOM PACILITY LIST
0A334	SEE COMPUTER ROOM FACILITY LIST
0A336	SEE COMPUTER ROOM FACILITY LIST
MR 33	SEE COMPUTER ROOM FACILITY LIST
2C 405	SEE COMPUTER ROOM FACILITY LIST
2C 407	SEE COMPUTER ROOM PACILITY LIST
3C 141	SEE COMPUTER ROOM FACILITY LIST
3C 141	SEE COMPUTER ROOM FACILITY LIST
3D 402	SEE COMPUTER ROOM FACILITY LIST
3D 402	SEE COMPUTER ROOM FACILITY LIST
3D 404	SEE COMPUTER ROOM FACILITY LIST
3D 406	SEE COMPUTER ROOM FACILITY LIST
3D 406	SEE COMPUTER ROOM FACILITY LIST
3D 409	SEE COMPUTER ROOM FACILITY LIST
3D 410	SEE COMPUTER ROCH FACILITY LIST
30 412	SEE COMPUTER ROOM FACILITY LIST
3D 417	SEE COMPUTER ROOM FACILITY LIST
3D 412	SEE COMPUTER ROOM PACILITY LIST
40 205	SEE COMPUTER ROOM FACILITY LIST
4C 209	SEE COMPUTER ROOM PACILITY LIST
4C 211	SER COMPUTER ROOM FACILITY LIST
4C 213	SEE COMPUTER ROOM PACILITY LIST
46 403	SKE COMPUTER ROOM PACIFITY LIST
4C 102	SEE COMPUTER ROOM FACILITY LIST
40 403	SKE COMPUTER ROOM PACILITY LIST
4C 402	SEE COMPUTER ROOM PACILITY LIST
4C 417	SEE COMPUTER ROCH FACILITY LIST
4C 417	SEE COMPUTER ROOM FACILITY LIST
4C 417	SEE COMPUTER ROOM FACILITY LIST
4D 204 4D 208	SEE COMPUTER ROOM FACILITY LIST
	SEE COMPUTER ROOM PACILITY LIST
	SEE COMPUTER ROOM FACILITY LIST
	SEE COMPUTER ROOM FACILITY LIST
	SEE COMPUTER ROOM FACILITY LIST
4D 324 4D 326	SEE COMPUTER ROOM FACILITY LIST
4D 328	SEE COMPUTER ROOM FACILITY LIST SEE COMPUTER ROOM FACILITY LIST
IN JEG	SEE CORPUTER ROOM PACILITY LIST

FWS 2: AIR CONDITIONING

16-Jun-9	93 RECURRING WORKL	nan		
—— > NB 15	AC #11 COMPRESSOR & AIR HANDLING UNIT	0.10	30	
HR 21, TOWER 1	TRANE (WATER COOLED) RWUDO 20GCCOHET 1ROYBUG	U90G02687	20	0 -> ITO 91-0268
HR 22,TOWER 2	CARRIER (WATER COOLED) 50BJ028-500	B695710	25	0
	(RM 2D 134 TO 126 & 2C 135 TO 125)	2472/10	23	•
HR 22, TOWER 2	CARRIER (WATER COOLED) 30 HK 040 530	P630537	20	0.L
KR 22	AIR HANDLER (CHILLER) AV-19	8714748	4.7	0,2
	(RM 2D 140 TO 208 & 2C 141 TO 205)	*******		
MR 23	TRANE CCUA0156HB51CF5C5B361	C L78M16845	15	0.L
	(PAN COIL IN RMS 2C 319-317-315; 2D 320-318-31	6-314 & 321)		-,2
KR 23	AC \$13 COMPRESSOR & AIR HANDLING UNIT	2291J02584	20	0
11h a s	07BA022-520			•
MR 23	AC \$14 COMPRESSOR & AIR HANDLING UNIT		40	1 - ITO 91-0268
KR 34	CLIHATROL LLD-7532-13-U	67A72-N-54	75	• • • • • • • • • • • • • • • • • • • •
KR 34	TRANE CLINATE S2E0000 14 A/B	RA .		
KR 34	CENTURI HASTER ZE137RRF3-4			
MR 41	AS AT COURDINGTON . AND HAVE			
MR 43	AC 47 CCHPRESSOR & AIR HANDLING UNIT		40	0 -> ITO-91-0268
48 43	**************************************	P16196175	10	
	AIR HANDLER UNIT TO TRANE UNIT - (CONDESNER HEA MR 143)	R FLATFORM #7; AIR H	ANDLER I	N
TOTAL BRUDON AT C	ID COURTETCHING WITER AND ADDRESS			•
TOTAL STO COUNTRY	IR CONDITIONING UNITS (MYER CENTER):	27		
terum utv countill	CHING TONNAGE (MYEE CENTER):	8	KRR	

FAGE 1 ATER CENTER A C

RECURRING WORKLOAD

TRANE CENTRAVAC UNITS, BLDG 2706 AND AIE HANDLERS, BLDG 2700 (MYER CENTER)

LOCATI	OH HAKE	KODEL NUMBE	R SERIAL NUMBER	UNITS
OY TEA	KL:			
OA 418	5 AIR HANDLERS			
FIRST 1	FLOOR:			
1E 204	VAY (OVER ENTRY DOG MINI AUDITORIUM MINI AUDITORIUM	R) - 2 UNITS		CUH-1 AHU-2
1E 322	TRANE CLIMATE (S CENTURI MASTER		K836809	RF-R-2 AHU-3 RF-3
1B 405	TRANE CLIMATE CENTURI MASTER	OVER STAIRWELL \$10)		AHU-4 AF-R-4
AIR HAN		MON GINTERPORT \$10)		
	CAPRIER	39BA060B12	861730094	
	CARRIER	39BA060E12	861730096	
	CARRIER	39BA060B12	861730098	
	CARRIER	39BA060E12	861730097	
1B 401	CAPRIER	39BA060B12		
SECOND E	LOOR:			
MR-21-A	TRANE CLIMATE CENTURI MASTER	S29000014 XB137K	K83C8101	AHU-2-1 AHU-2-1
MR-22-A	TRANE CLIMATE CENTURI HASTER	\$28000014 XB137K	K8328102	AHU-2-2 AHU-2-2
MR-23	TRANE CLINATE CENTURI MASTER			AHU-2-3 RY-2-3
MR-24	TRANE CLIMATE CENTURI MASTER	S2014B0 XB137K	K83C86104	AHU-2-4 RF-RF-2-4
	TRANE CLIMATE CENTURI HASTER	S2014CO IB137K	K83C86104	AHU-2-4-A RF-R-2-4-A
	TRANE CLIMATE CERTURI HASTER TRANE CLIMATE	S2025B0 XB137K S2014B0	K83C86106	AHU-2-5 RF-R-2-5 RF-R-2-5-A
	CENTURI HASTER	IE 137K		re-r-z-3-a AHU-2-5-a

Attachment 8.2

Hope Road/Charles Wood Electric Bills

US ARMY FORT MONMOUTH CAMP WOOD
DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

H

US ARMY FORT HONHOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD EATONTOWN NJ

07724

80 51 33 0500 1 5

GT - GENERAL SERVICE

TRANSMISSION VOLTAGE

ACTUAL METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE

ON PEAK OFF PEAK \$ 114,451.63 82,203.84 PREVIOUS BALANCE BALANCE AT BILLING

.00

ENERGY ADJ CHG 2 \$.002160- PER KHH CURRENT PERIOD CHARGES

4,976.64CR CURRENT PERIOD CHARGES \$ 191,678.83 TRANSFER TO 635100000911 191,678.83 191,678.83CR

05/03/94 TO 06/01/94 FOR 29 DAYS

AMOUNT DUE

METER NUMBER			READING PREVIOUS	MULTIPLIER
50693195	e	714	604	9000
50693195	G	977	831	9000
62018313	e	1060	876	9000

	KILUPALI	K	EPT21FKER		PILLTING
	HOURS USED	. <u>K</u>	H / KVAR	<u>10</u>	H / KVAR
	990,600	~~~			057.0
1	1,314,000 0	CEDY	4,147.2	•	,957.2 0.0
•	1,656,000	DVAH	2,991.6	,	.991.6
	1,050,000	KYAZI	2,771.0	٠.	,,,1.0

PLEASE CONSERVE-HIGHER SUMMER RATES ARE IN EFFECT.

US ARMY FORT MONMOUTH CAMP WOOD
DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

H

21 805133050015 000000000000000000000000000

US ARMY FORT MONMOUTH

501 GRAND AVENUE

ASSURY PARK, NJ 07712

HOPE RD

EATONTOWN NJ 07724

80 51 33 0500 1 5

GT - GENERAL SERVICE

TRANSMISSION VOLTAGE

FOR 29 DAYS

50693195 G

50693195 G

62018313 G

OUTDOOR LIGHT

ACTUAL METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

REGISTERED

\$ 165,355.64 BASE CHARGE ON PEAK OFF PEAK 115,423.20 OUTDOOR LIGHT 12.37 ENERGY ADJ CHG 2 \$.002160- PER KMH 6,940.23CR CURRENT PERIOD CHARGES \$ 273,850.98 06/01/94 TO 06/30/94

866

1182

1283

PREVIOUS BALANCE BALANCE AT BILLING CURRENT PERIOD CHARGES TRANSFER TO 635100000911 AMOUNT DUE

KILOHATT

.00 273,850.98 273,850.98CR - 00

METER METER READING NUMBER CURRENT PREVIOUS

MULTIPLIER 9000 9000 9000

714

977

1060

HOURS USED KH / KYAR 1,368,000 ONPK 6,976.8 1.845,000 OFFPK 5,925.6 2,007,000 RVAH 3,880.8 65

6,976.8 0.0 3,880.8

BILLING

KH / KVAR

3,213.500

PLEASE CONSERVE-HIGHER SUMMER RATES ARE IN EFFECT.

US ARMY FORT MONMOUTH CAMP WOOD

DATE 1 JULY 1994

TOTAL AMOUNT DUE \$ 273850.98

HOPE RD

DISTRICT ASBURY PARK

EATONTOWN NJ

ELECTRIC SERVICE FROM	O	16-01 m	06-30	RATE	510
HEASURED DEMA	VI		DEMAND CHARGE	<u>:</u>	
697	6.80 KW		_KH 3	<u> </u>	
ON PEAK 697	6.80_KW	6976.8	0KH a 9.22	64326.10	
			_кн э		
		<u></u>	_KH 9		64326.10
OFF PEAK 592	5.60 KW R	KVAH USE	2007000 P	<u>F</u> .87	,
	к	VAR	€ R. DRRF	43	1668.74
KNH HETER			ENERGY CHARGE		
	F PEAK 1182	0	кин э	235.52	
	977	1368000	KNH 3 .072460	99125.28	ON PEAK
152	205	1845000	KHH 9 .062560	115423.20	OFF PEAK
HETIPLIER 9000	9000		жин э	·	
use 1368000 <u>18</u> 6	4500 0		кик э		
	 .		кин э		
			кин э		
			кин э		
			кин э		214784.00
	EN	ERGY ADJUST	MENT CHARGE	.002160-PER K	WH <u>6940.08</u> -
		•			
		•			
				SUB TOTAL	\$
			·		
				SUB TOTAL	\$ 273838.76
			OUTD	OOR AREA LIGHTIN	IG12.22

13/

JUL94

US ARMY FORT MONMOUTH CAMP WOOD DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

US ARMY FORT MONMOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

\$ 326,336.20

HOPE RD

EATONTOHN NJ

~-

80 51 33 0500 1 5

GT - GENERAL SERVICE

TRANSMISSION VOLTAGE

ACTUAL METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE ON PEAK \$ 184,700.06
OFF PEAX 150,331.68
OUTDOOR LIGHT 13.75
ENERGY ADJ CHG 3 \$.002160- PER KHH 8,709.29CR

PREVIOUS BALANCE
BALANCE AT BILLING
CURRENT PERIOD CHARGES
TRANSFER TO 635100000911

AHOUNT DUE

\$ 00 \$.00 326,336.20 326,336.20CR

CURRENT PERIOD CHARGES 06/30/94 TO 08/02/94 FOR 33 DAYS

METER	METER	READING	
NUMBER	CURRENT	PREVIOUS	MULTIPLIER
50693195 G	1047	866	9000
50693195 G	1449	1182	9000
62018313 G OUTDOOR LIGHT	1564	1283	9000
OUTDOOK CIENT			

KILOHATT	REGISTERED	BILLING
HOURS USED	KH / KVAR	KH Z KYA
1,629,000 ONP 2,403,000 OFFP	7,020.0	7,020.0
2,403,000 OFFP	K/ 5,929.2	0.0
2,529,000 RVA 75	H 3,960.0	3,%0.0

4,032,000

PLEASE CONSERVE-HIGHER SUPPER RATES ARE IN EFFECT.

PROTECT AND SECURE YOUR PROPERTY OR INCREASE THE VISIBILITY OF YOUR BUSINESS WITH AN EMERGY-EFFICIENT SECURITY LIGHTING SYSTEM. ME OFFER AFFORDABLE HONTHLY RATES, FREE MAINTENANCE, AND A LEASED SYSTEM MICH MEANS THERE IS NO UP-FRONT INVESTMENT. CALL TODAY FOR A FREE OUTDOOR LIGHTING SURVEY:

NORTHERN REGIONAL MARKETING OFFICE 201-455-8942 SOUTHERN REGIONAL MARKETING OFFICE 908-502-4657

US ARMY FORT HONHOUTH

DATE AUGUST 1994

TOTAL AMOUNT DUE \$ 326336.20

DISTRICT ASBURY PARK

HOPE RD EATONTOWN NJ

DIRECT	ROM	06-30 то	08-02	RATE .	510
MEASUR	RED DEMAND		DEMAND CHARG	SE .	
	7020.00 KW		_KH 3	\$	
ON PEAK	7020.00 KW	7020.0	<u>О</u> кна 9.22	64724.40	
5			_KH 9		
. •			_кн э	-	£ 64724.40
FF PEAK	5929.20 KW	RKVAH USE	2529000	<u>PF</u> .87	
		KVAR	3960 0 2	_43	1702.80
KNH P ON PEAK	ETER OFF PEAK		ENERGY CHARGE		
ESENT 1047	1449	0	кин э	\$ 235.52	
EVIOUS 866	1182	1 <u>629000</u>	кин а .072460	118037.34	OH PEAK
FERENCE 181	267.	<u> </u>	KMH 9 .062560	150331_68	OFF PEAK
TIPLIER 9000	9000		KHH 3		
1629000	2403000	-	кин э		
			кин э		
			кин э		
			кин э		
·			кин э		268604.54
	1	ENERGY ADJUST	MENT CHARGE	.002160-PER K	WH <u>8709.12</u> -
					•
				SUB TOTA	<u> </u>
			,	SUB TOTAL	\$ 325322.62
			OUT	OOD ADEA LIGHTI	13.58

US ARMY FORT MONMOUTH CAMP WOOD DIRECTOR OF PUBLIC HORKS SELFM-PH-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

US ARMY FORT MONMOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD

EATONTOHN NJ 07724

80 51 33 0500 1 5

GT - GENERAL SERVICE TRANSHISSION VOLTAGE

ACTUAL METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE

ON PEAK OFF PEAK

\$ 158,741.17

PREVIOUS BALANCE BALANCE AT BILLING .00 .00

OUTDOOR LIGHT

115,986.24 13.75 ENERGY ADJ CHG & \$.002160- PER KHH 6,823.61CR

CURRENT PERIOD CHARCES TRANSFER TO 635100000911 257,917 55

CURRENT PERIOD CHARGES 08/02/94 TO 08/31/94

\$ 257,917.55

267,917.55CR

FOR 29 DAYS

AMOUNT DUE

.co

METER NUTBER	METER CURRENT	READING PREVIOUS	MULTIPLIER	KILOHATT HOURS USED	REGISTERED KM / KVAR	BILLING KM / KVAR
50693195 G 50693195 G 62018313 G OUTDOOR LIGHT	1192 1655 1787	1047 1449 1564	9000 9000 9000	1,305,000 OFF 1,854,000 OFFP 2,007,000 RVA 75 3159,000	K) 5,598.0	6,757.2 0.0 3,823.2

PLEASE CONSERVE-HIGHER SUPPER RATES ARE IN EFFECT.

PROTECT AND SECURE YOUR PROPERTY OR INCREASE THE VISIBILITY OF YOUR BUSINESS WITH AN ENERGY-EFFICIENT SECURITY LIGHTING SYSTEM. HE OFFER AFFORDABLE MONTHLY RATES, FREE MAINTENANCE, AND A LEASED SYSTEM WHICH HEARS THERE IS NO UP-FRONT INVESTMENT. CALL TODAY FOR A FREE OUTDOOR LIGHTING SURVEY:

NORTHERN REGIONAL MARKETING OFFICE 201-455-8942 SOUTHERN REGIONAL MARKETING OFFICE 908-502-4657 *********************************

as ARMY FORT HONHOUTH CAMP WOOD

DATE

AUGUST 1994

DISTRICT ASBURY PARK

HOPE RD EATONTOWN NJ DIRECTOR OF PUBLIC WORK

ELECTRIC SERVICE PI	ROM	08-02 to 08-31	RATE	510
MEASUI	RED DEMAND	· DEH	AND CHARGE	
·	6757.20 KW	ки э	<u>\$</u>	_
ON PEAK	6757.20 KW	6757.20 KW a	9.22 62301.3	<u>8</u>
		кн э	-	_
		кн э		<u> 62301.38</u>
OFF PEAK	5598.00 KW	RKVAH USE 20070	00 PF .87	
•		KVAR 382	3 2 3 43	1643.97
кин 1	METER	ENERG	GY CHARGE	
ON PEAK RESENT 1192	OFF PEAK	0 кин а	<u>\$ 235.52</u>	
REVIOUS 1047	1449	1 <u>305000</u> кин а	.072460 94560.30	ON PEAK
IFFERENCE 145	206	1854000 кин а	.062560 115986.24	OFF PEAK
utirlies 9000	9000	КИН Э		
^{se} 1305000	1854000	кин э		
		КИН э		
		кин э		
		кин э		
		кин э		210782.06
		NERGY ADJUSTMENT	CHARGE .002160-PER	R KWH 6823.44-
				· · · · · · · · · · · · · · · · · · ·
			. SUB TO	TAL \$
			- SUB TO	DTAL \$ 267903.97
			0077000 1071 130	17 E9
				HTING 13.58
			TOTAL AMOUNT	DUE \$ 247917.55

US ARMY FORT MONMOUTH CAMP HOOD
DIRECTOR OF PUBLIC HORKS
SELFM-PH-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

US ARMY FORT HONMOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD EATONTOHN NJ

07724

80 51 33 0500 1 5

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

ACTUAL METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE

ON PEAK

\$ 142,754.33

PREVIOUS BALANCE BALANCE AT BILLING

.00

OUTDOOR LIGHT

OFF PEAK 103,599.36

.00

13.75

CURRENT PERIOD CHARGES

240,127.03

ENERGY ADJ CHG 2 \$.002160- PER KHH CURRENT PERIOD CHARGES

6,240.41CR

TRANSFER TO 635100000911

240,127,03CR

\$ 240,127.63

AMOUNT DUE

.00

08/31/94 TO 09/30/94 FOR 30 DAYS

METER	METER	READING		KILOHATT	REGISTERED	BILLING
NUMBER	CURRENT	PREVICUS	<u> Hultiplier</u>	HOURS USED	KH / KVAR	KM / KVAR
50693195 G 50693195 G 62018313 G	1329 1839 1992	1192 1655 1787	9000 9000 9000	1,233,000 ONPK 1,656,000 OFFPK 1,845,000 RYAH	4,856.4	5,623.2 0.0 3,092.4
OUTDOOR LIGHT				2589 000		

REHEIBER, DAYLIGHT SAVINGS TIME ENDS OCTOBER 30TH. THIS HEARS MORE HOURS OF DARKNESS. PROTECT AND SECURE YOUR PROPERTY OR INCREASE THE VISIBILITY OF YOUR BUSINESS WITH AN ENERGY-EFFICIENT OUTDOOR SECURITY LIGHTING SYSTEM. HE OFFER AFFORDABLE MONTHLY RATES, FREE MAINTENANCE, AND A LEASED SYSTEM, WHICH HEARS THERE IS NO UP-FRONT INVESTMENT. CALL TODAY FOR YOUR FREE OUTDOOR LIGHTING SURVEY:

NORTHERN REGIONAL MARKETING OFFICE 201-455-8942 SOUTHERN REGIONAL MARKETING OFFICE 908-502-4-57 ************************************ >>FOR ALL OTHER INQUIRIES OR TO REPORT AN OUTAGE PLEASE USE PHONE NUMBERS LISTED BELON

1-800-662-3115

1-908-531-3277

10/14/94

1

NO PAYMENT DUE

(

(

US ARMY FORT MONMOUTH CAMP WOOD

DATE

SEPTEMBER

1994

HOPE RD

DISTRICT ASBURY PARK

EATONTOWN NJ DIRECTOR OF PUBLIC WORK

ELECTRIC SERVICE PR	ROM	08-31 το	09-30	BATE	510
MEASUR	ED DEMAND		DEMAND CHARG	E	
	5623.20 KW		<u> кн э</u>	<u> </u>	
ON PEAK	5623.20 KW	5623.	20 KH a 9.22	51845.90	
			KH 9		
			КН Э		51845.90
OFF PEAK	4856,40 KW	RKYAH USE	1845000	PF88	
	······································	KVAR	3092.4.3	43	1329.73
	HETER		ENERGY CHARGE		
ON PEAK PRESENT 1329	OFF PEAK 1839		<u>о</u> кнн э	<u>\$ 235.52</u>	
PREVIOUS 1192	1655	1 <u>23300</u>	<u>о</u> кин а .072460	<u>89343.18</u>	ON PEAK
DIFFERENCE 137	184	165600	n KHH a .062560	103599.36	OFF PEAK
AULTIPLIER 9000	9000		_ KHH 3		
use 1233000	1656000		_ KHH 3		
•			_ кин э		
		-,	_ KMH 3		
		-	_ кин э		
			_ KMH 9		193178.06
		ENERGY ADJU	STMENT CHARGE	.002160-PER	KWH <u>6240.24</u> -
				SUB TOTA	AL \$
				SUB TOT	AL \$ 240113.45
					·
			оит	DOOR AREA LIGHT	ING 13.58
				TOTAL AMOUNT DE	JE \$ 240127.03

US ARMY FORT MONMOUTH CAMP WOOD
DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

US ARMY FORT MONHOUTH

HOPE RD

501 GRAND AVENUE ASBURY PARK, NJ 07712

EATONTOWN NJ

07724

80 51 33 0500 1 5

ACTUAL METER READING

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

THIS IS YOUR CURRENT BILL CALCULATION PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE	ON PEAK OFF PEAK	\$	109,544.08 86,708.16	PREVIOUS BALANCE BALANCE AT BILLING	\$ \$	<u>.00.</u> .00
OUTDOOR LIGHT			13.75	CURRENT PERIOD CHARGES	-	191,153.10
ENERGY ADJ CHE	\$ \$.002160- PER	KHH	5,112.89CR	TRANSFER TO 63510G000911		191,153.10CR
CURRENT PERIOD	CHARGES	\$	191,153.10	AMOUNT DUE		.00
09/30/94 TO 10/	29/94					
FOR 29 DAY	\$					

METER NUMBER	METER CURRENT	READING PREVIOUS	MULTIPLIER	KILOHATT HOURS USED	REGISTERED KM / KYAR	BILLING KH / KVAR
50693195 G 50693195 G 62018313 G OUTDOOR LIGHT	1438 1993 1970	1329 1839 1808	9000 9000 9000	981,000 CNPK 1,386,000 OFFPK 1,458,000 RVAH	4,482.0 4,413.6 2,278.8	4,482.0 0.0 2,278.8
				2367000		

NOW THAT DAYLIGHT SAVING TIME HAS ENDED, THERE ARE MORE HOURS OF DARKNESS. PROTECT AND SECURE YOUR PROPERTY OR INCREASE THE VISIBILITY OF YOUR BUSINESS HITH AN ENERGY-EFFICIENT OUTDOOR SECURITY LIGHTING SYSTEM. HE OFFER AFFORDABLE MONTHLY RATES, FREE MAINTENANCE, AND A LEASED SYSTEM, MHICH MEANS THERE IS NO UP-FRONT INVESTMENT. CALL TODAY FOR YOUR FREE OUTDOOR LIGHTING SURVEY: MORTHERN REGIONAL MARKETING OFFICE 201-455-8942 SOUTHERN REGIONAL MARKETING OFFICE 908-502-4657

>>FOR ALL OTHER INQUIRIES OR TO REPORT AN OUTAGE PLEASE USE PHONE NUMBERS LISTED BELOW

1-800-662-3115

1-908-531-3277

11/14/94

NO PAYMENT DUE

רא אאכ כ ססכ	5%)	DISTRICT AS	BURY PARK	
2 4	09-30 to	10-29	RATE	510
ED DEMAND		DEMAND CHAR	IGE	
4482.00 KW		_ к н э	<u>\$</u>	
4482.00 KW	4482.0	<u>10</u> кы э 8.31	37245.42	
		_ км э		
		_км а		\$ 37245.42
4413.60 KW	RKVAH USE	1458000	PF .39	
	KVAR	2278 8 3	43	979.88
ETER	-	ENERGY CHARG	Ε	
OFF PEAK 1993	0	кин э	\$ 235.52	
1839	981000	Кин а .07246	71083.26	ON PEAK
154	1386000	KWH a .062561	86708.16	OFF PEAK
9000		кин э		
1386000		кми э		
		кин э		
		кин э		
	*** ·- ·- ·-	кин э		·····································
	***	кин э		158026.94
	ENERGY ADJUS	TMENT CHARGE	.002160-PER	KWH 5112.72-
			SUB TOT	The state of the s
	ODD OWN NJ OR OF PUBLIC H DEMAND 4482.00 KW 4482.00 KW 4482.00 KW 4413.60 KW 1993 1839 154 9000 1386000	DWN NJ OR OF PUBLIC WORK M 09-30 TO B DEHAND 4482.00 KW 4482.00 KW 4482.00 KW 4482.00 KW RKVAH USE KVAR ETER OFF PEAK 1993 1839 1839 154 1386000	DISTRICT AS DIWN NJ ACCOUNT NO. 8 OWN NJ ACCOUNT NO. 8 ACCOUNT NO. 8 ACCOUNT NO. 8 DEMAND CHAR 4482.00 KW 4482.00 KW 4482.00 KW 3 KW 3 KW 3 KW 3 KW 3 ETER OFF PEAK 1993 1839 1839 1839 1839 1386000 KWH 3 CWH 3 CWH 3 CWH 3 KWH 3 KWH 3 KWH 3 KWH 3 KWH 3 KWH 3 KWH 3	DISTRICT ASBURY PARK ACCOUNT NO. 805133-0500-1 COOR OF PUBLIC WORK DEMAND CHARGE 4482.00 KW

OUTDOOR AREA LIGHTING 13.58

TOTAL AMOUNT DUE 191157 10



US ARMY FORT MONMOUTH CAMP WOOD DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

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21 805133050015 0000000000000000000000000

ESTIMATED BILL

US ARMY FORT HONHOUTH HOPE RD

501 GRAND AVENUE

ASBURY PARK, NJ 07712

EATONTOWN NJ

07724

80 51 33 0500 1 5

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

ESTIMATED METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE

ON PEAK

\$ 122,723.03

PREVIOUS BALANCE

.00

OUTDOOR LIGHT

OFF PEAK

97,965.96

BALANCE AT BILLING

.00

ENERGY ADJ CHG 2 \$.002160- PER KMH

13.75 5-793.29CR

CURRENT PERIOD CHARGES TREASFER TO 535100000711 214,912.45 214,912.45CR

CURRENT PERIOD CHARGES 10/29/94 TO 12/01/94

214,912.45 AMOUNT DUE

FOR 33 DAYS

METER NUMBER	METER CURRENT	READING PREVIOUS	MULTIPLIER
50693195 G			
50693195 G	1550	1438	9000
50693195 G			
50693195 G	2147	1993	9000
62018313 G			
62018313 G	2160	1970	9000
OUTDOOR LIGHT			

KILOMATT HOURS USED	REGISTERED KM / KVAR	BILLING KM / KVAR
108,000 1,116,000 ONE 180,000	4,864.5	4,864.5
1,566,000 OFFI	× 4,366.8	0.0
/ 1,899,000 RV/ 73	uh 2,786.4	2,786.4

ALL OF US AT JERSEY CENTRAL POHER AND LIGHT COMPANY HISH YOU A HAPPY HOLIDAY SEASON

1-800-662-3115

1-908-531-3277

12/19/94

NO PAYMENT DUE

US ARHY FORT HONMOUTH

DATE

DECEMBER 1994

HOPE RD EATONTOWN NJ

DISTRICT ASBURY PARK

PLECTRIC SERVICE FRO	ж	10-29 то	12-01	RATE	510
	ED DEMAND		DEMAND CHAR	GE	
	4864.50 KW	-	_кнэ	<u> </u>	
N PEAK	4864.50 KW	4864.5	<u>0</u> кы э 8.31	40424.00	
			_кмэ		
			_км э		£ 40424.00
F PEAK	4366.80 KW	RKVAH USE	1899000	<u>PF</u> 87	
		KVAR	2786 4 3	_63	1198.15
ON PEAK	ETER OFF PEAK		. ENERGY CHARGE	. .	
sent 1550	2147	0	кин э	\$ 235.52	
vious 1438	1993	1 <u>116000</u>	KWH a .072460	30865.36	ON PEAK
TRENCE 112	154	1566000	KWH 3 .062560	97968.96	OFF PEAK
IPLIER 9000 .	9000		KHH 3		
1116000	1566000				
-		63-51-00	-000 911		•
					
			KMN a		179069.84
	E	NERGY ADJUS	TMENT CHARGE	.002160-PER K	WH <u>5793.12</u>
				SUB TOTAL	<u> </u>
				SUB TOTAL	. \$ <u>214898_87</u>
			ОИТ	DOOR AREA LIGHTIN	IG 13.58
		•	201	TOTAL AMOUNT DUE	

US ARMY FORT MONMOUTH
CAMP WOOD
DIRECTOR OF PUBLIC WORKS
SELFM-PW-R BLD 173
FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

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ESTIMATED BILL

US ARMY FORT MONMOUTH

501 GRAND AVENUE

HOPE RD

ASBURY PARK, NJ 07712

EATONTOWN NJ

07724

80 51 33 0500 1 5

ESTIMATED METER READING

.00 .00 192,8%.47 192,8%.47CR

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE	ON PEAK	\$	112,951.30	PREVIOUS BALANCE	\$
	OFF PEAK		85,019.04	BALANCE AT BILLING	\$
OUTDOOR LIGHT			13.75	CURRENT PERIOD CHARGES	
ENERGY ADJ CHG	\$ \$.G02160- PER	XXXI	5,087.62CR	TRANSFER TO 635100000911	
CURRENT PERIOD	CHARGES	\$	192,896.47	AMOUNT DUE	
12/01/94 TO 12/	30/94				
FOR 29 DAY	S				

METER	METER	PEADING		KILDHATT	REGISTERED	BILLING
NUMBER	CURRENT	PREVIOUS	MULTIPLIER	HOURS USED	KH / KVAR	KM / KVAR
50693195 G				96,300)	
50693195 G	1650	1550	9000	996,300 ONP	(4,737.6	4,737.6
50693195 G				171,000	1	
50693195 G	2279	2147	9000	1,359,000 OFFP	4,289.4	0.0
62018313 G				167,400	<i>:</i>	
62018313 G	2318	2160	9000	1,589,400 RVA	1 2,684.7	2,684.7
OUTDOOR LIGHT				/ 75		
				1179111	a ,	
			,	(17946)		

1-800-662-3115

1-908-531-3277

01/16/95

NO PAYMENT DUE

US ARMY FORT HONMOUTH CAMP WOOD

DATE DECEMBER 1994

4737.60 KW

HOPE RD

KVAR

DISTRICT ASBURY PARK

EATONTOWN NJ DIRECTOR OF PUBLIC WORK

MEASURED DEMAND

ON PEAK 4737.60 KW

KHH HETER

use 996300 1359000

PRESENT 1650

PREVIOUS 1550

DIFFERENCE 100

HULTIPLIER 9000

ON PEAK OFF PEAK 1650 2279

2147

____132

9600

ELECTRIC SERVICE FROM

ACCOUNT NO. 805133-0500-1 CK 5 12-01 m 12-30 RATE 510 DEMAND CHARGE _____KM 9 4737.60 KH 2 8.31 39369.46 ____ки а ____KM 3 39369.46 QFF PEAK 4289.40 KW RKVAH USE 1589400 PF .87 7684 7 3 43 1154.42 ENERGY CHARGE <u>\$ 235.52</u> 0 KMH 9 ON PEAK 1359000 KHH 2 .062560 _85019.04 OFF PEAK ____ кмн э _____ KMH 9 ____ кмн э ____ кмн э ____ KMH 9 ___ кмн э 157446.46 ENERGY ADJUSTMENT CHARGE .002160-PER KWH 5087.45-

SUB TOTAL \$ 192882 89

SUB TOTAL \$

OUTDOOR AREA LIGHTING 13.58

TOTAL AMOUNT DUE \$ 192896 47

US ARMY FORT MONMOUTH CAMP WOOD
DIRECTOR OF PUBLIC WORKS
SELFM-PH-R BLD 173 07703 FORT MONMOUTH NJ

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

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57 902733020072 000000000000000000000PP

ESTIMATED BILL

US ARHY FORT HONHOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD LIA IMOTINOTAS

07724

80 51 33 0500 1 5

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

ESTIMATED METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

\$ 113,501.59 BASE CHARGE ON FEAK OFF PEAK 94,977.14 13.60 CHIECUS LIGHT ENERGY ADJ CHG 2 \$.002160- PER KHH 5,462.81CR \$ 203,029.52

PREYTOUS BALANCE BALANCE AT BILLING CURRENT PERICO CHARGES TRANSFER TO 635100000911 AMOUNT DUE

.00 .00 203,029.52 203,029.52CR

CURRENT PERIOD CHARGES 12/30/94 TO 01/30/95 FOR 31 DAYS

METER Number	METER CURRENT	READING PREVIOUS	MULTIPLIER
50693195 G 50693195 G 50693195 G 50693195 G 62018313 G	1748 2427	1650 2279	9000
62018313 G OUTDOOR LIGHT	2486	2318	9000

KILOHATT Hours USED	REGISTERED KM / KVAR	BILLING KM / KVAR
126,000 1,008,000 189,000	PK 4,725.9	4,725.9
1,521,000 OFFF	K 4,247.1	0.0
1,710,000 RVA	H 2,491.2	2,491.2

US ARMY FORT MONMOUTH CAMP WOOD

2

DATE JANUARY 1995

THE AMBIENT BUF \$ 201029 52

HOPE RD

DISTRICT ASBURY PARK

EATONTOWN NJ

ELECTRIC SERVICE FRO	H	12-30 го	01-30	RATE	510
HEASURE	D DEMAND		DEMAND CHARGE	Ē	
	4725.90 KW		_км э	<u>\$</u>	
ON PEAK	4725.90 KW	4725.9	0км э 8.31	39272.23	
		-	_км э		
			_км э		\$ 39272.23
DEF PEAK	4247.10 KW	RKVAH USE	1710000 F	<u>F</u> .88	
		KVAR	2491.2 3	43	1071.21
KHH H ON PEAK	ETER OFF PEAK		ENERGY CHARGE		
1748	2427	0	кмн э	<u>\$ 235.52</u>	
evious 1650	2279	1 <u>008000</u>	кин а .072460	73039.68	ON PEAK
FFERENCE 98	148	1521000	KWH 9 .062560	95153.76	OFF PEAK
LTIPLIER 9000	9000		кмн э		
E 1008000	1521000	<u> </u>	кмн э		
			. КМН Э		
		·	кин э		
			кин э		
			КИН Э		168428.96
		ENERGY ADJUS	TMENT CHARGE	.002160-PER	KWH 5462.64
		-		SUB TOT	AL \$
					·
				SUB TOT	AL <u>\$ 203309.76</u>
			RATE CHANGE A	DJUSTMENT	293 67
			DUT	DOOR AREA LIGHT	ING 13.43

US ARMY FORT MONMOUTH CAMP WOOD DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLD 173 FORT MONMOUTH NJ

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

ESTIMATED BILL

US ARMY FORT MONHOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD EATONTOHN NJ

80 51 33 0500 1 5

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

ESTIMATED METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

ON PEAK BASE CHARGE \$ 115,812.69 OFF PEAK 88,789.68 OUTDOOR LIGHT 13.60 EMERGY ADJ CHG 2 \$.002160- FER KHH 5,326.72CR CURRENT PERIOD CHARGES \$ 199,289.25

PREVIOUS BALANCE .00 BALANCE AT BILLING CURRENT PERIOD CHARGES 199,239.25 TRANSFER TO 635100000911 199,269.25CR AHOUNT DUE .00

01/30/95 TO 03/01/95 FOR 30 DAYS

METER METER READING KILOHATT REGISTERED BILLING KH / KVAR CURRENT PREVIOUS MULTIPLIER HOURS USED NUMBER KH / KVAR 50693195 G 117,000 1851 50693195 G 1748 9000 1,044,000 ONPK 4,691.7 4,691.7 50693195 G 189,000 9000 50693195 G 2564 2427 1,422,000 OFFPK 4,295.7 0.0 62018313 G 189,000 9000 2,479.5 2,479.5 62018313 G 2642 2486 1,593,000 RVAH OUTDOOR LIGHT 68 2,772,000

> IMPROVE THE VISIBILITY, SECURITY, AND AESTHETICS OF YOUR PROPERTY WITH AN ENERGY-EFFICIENT OUTDOOR LIGHTING SYSTEM. INSTALLING THIS TYPE OF SYSTEM IS SIMPLE AND COST-EFFECTIVE. HE OFFER LOW HONTHLY RATES, FREE HAINTENANCE AND NO UP-FRONT INVESTMENT. HE EVEN OFFER GUARANTEED 10-DAY TURNAROUND TIME FOR OUR STANDARD INSTALLATION! CALL TODAY FOR YOUR FREE OUTDOOR LIGHTING SURVEY: NORTHERN REGIONAL SALES OFFICE 201-455-8942 SOUTHERN REGIONAL SALES OFFICE 908-502-4657

>>FOR ALL OTHER INQUIRIES OR TO REPORT AN OUTAGE PLEASE USE PHONE NUMBERS LISTED BELOW

03/13/95

JERSEY CENTRAL POWER AND LIGHT COMPANY FEBRUARY 1995 DATE ORT HONHOUTH DISTRICT ASBURY PARK ACCOUNT NO. 805133-0500-1 CK 5 DIRECTOR OF PUBLIC WORK RATE 01-30 to 03-01 510 DEMAND CHARGE MEASURED DENAND 4691.70 KW _____ки э IN PEAK 4691.70 KW 4691.70 KH a 8.31 38988.03 ____ки а ____ KM 3 \$ 38988.03 JFF PEAK 4295.70 KW RKVAH USE 1593000 PF .88 KVAR 2679 5 3 43 1066.18 ENERGY CHARGE - KNA HETER ON PEAK OFF PEAK **₹ESENT** 1851 0 KHH a \$ 235.52 2564 TEVIOUS 1748 2427 1044000 KHH 2 .072340 75522.96 ON PEAK _____ KMH 9 ULTIPLIER 9000 9000 _____ кин а [™] 1044000 <u>1422000</u> _____ кмн э _____ кмн э ____ кин э ____ KMH 9 164548.16 ENERGY ADJUSTMENT CHARGE .002160-PER KWH___ SUB TOTAL &_____ SUB TOTAL \$ 199275 81 OUTDOOR AREA LIGHTING 13.44

TOTAL AMOUNT DUE \$ 199289 25

US ARMY FORT MONMOUTH CAMP HOOD DIRECTOR OF PUBLIC HORKS SELFM-PH-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE *

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

ESTIMATED BILL

US ARMY FORT HONHOUTH

501 GRAND AVENUE

ASBURY PARK, NJ 07712

HOPE RD EATONTOHN NJ

07724

80 51 33 0500 1 5

ESTIMATED METER READING

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE ON PEAK \$ 112,853.16
OFF PEAK 84,799.76
CLTGOOR LIGHT 13.60
ENERGY ADJ CHG 9 \$.002160- PER KHH 5,101.23CR
CURRENT PERIOD CHARGES \$ 192,565.29
03/01/95 TO 03/30/95
FOR 29 DAYS

PREVIOUS BALANCE \$
BALANCE AT BILLING \$
CURRENT PERIOD CHARGES
TRANSFER TO 635100000911
AMOUNT DUE

\$.00 \$.00 192,565.29 192,565.29CR .00

METER HETER READING KILOHATT REGISTERED BILLING NUMBER CURRENT PREVIOUS MULTIPLIER HOURS USED KH / KVAR KH / KVAR 50693195 G 94,500 50693195 G 1952 1851 9000 1,003,500 4,678.2 4,678.2 50693195 G 170,100 50693195 G 2696 2564 9000 1,358,100 OFFPK 4,280.0 0.0 62018313 G 153,000 62018313 G 2801 2642 9000 1,584,000 2,671.2 2,671.2 **DUTTOOOR LIGHT**

3,779,600

IMPROVE THE VISIBILITY, SECURITY, AND AESTHETICS
OF YOUR PROPERTY HITH AN ENERGY-EFFICIENT OUTDOOR
LIGHTING SYSTEM. INSTALLING THIS TYPE OF SYSTEM
IS SIMPLE AND COST-EFFECTIVE. HE OFFER LOM
MONTHLY RATES, FREE MAINTENANCE AND NO UP-FRONT
INVESTMENT. HE EVEN OFFER GUARANTEED 10-DAY
TURNAROUND TIME FOR OUR STANDARD DISTALLATION!
CALL TODAY FOR YOUR FREE OUTDOOR LIGHTING SURVEY:
NORTHERN REGIONAL SALES OFFICE 201-455-8942
SOUTHERN REGIONAL SALES OFFICE 908-502-4657

>>FOR ALL OTHER INQUIRIES OR TO REPORT AN OUTAGE
PLEASE USE PHONE NUMBERS LISTED BELOW

1-800-662-3115

1-908-531-3277

04/17/95

NO PAYMENT DUE

US ARMY FORT MONMOUTH

DATE

APRIL 1995

CAMP WOOD

DISTRICT ASBURY PARK

HOPE RD EATONTOWN NJ

ELECTRIC SERVICE FR	>	03-01 ro	03-30	RATE	510
HEASUR	ED. DEMAND		DEMAND CHARG	E .	
	4678.20 KW		_ки э	\$	
ON PEAK	4678.20 KW	4678.2	0KM a 8.31	38875.84	
			_ки а		
			_ KM 3		\$ 38875.84
OFF PEAK	4280.00 KW	RKVAH USE	1584000	<u>PF</u> .87	
		KVAR	2671.2 3	.43	1148.61
KM F ON PEAK	ETER OFF PEAK		ENERGY CHARGE		
UN PEAK 1952	2696	0	кин э	<u>\$ 235.52</u>	
evious 1851	2564	1 <u>003500</u>	кин а .072340	72593.19	ON PEAK
:=====================================	132	1358100	кин а .062440	84799.76	OFF PEAK
LTIPLIER 9000	9000		大品 子		
≖ 1003500	1358100		кин э	-	•
		4	кин э		
			кин э		
			кин э		•
		•	кин э		157628.47
		ENERGY ADJUS	TMENT CHARGE	.002160-PER	KWH <u>5101.06</u> -
			٠	SUB TOTA	AL \$
				SUB TOTA	AL \$_192551_86
			au a	TRAND ADEA LIGHT	ING 13.43
			501		JE \$ 192565.29

US ARMY FORT MONMOUTH CAMP HOOD
DIRECTOR OF PUBLIC HORKS
SELFM-PH-R BLD 173 FORT MONMOUTH NJ 07703

* NO PAYMENT DUE * MAKE CHECK PAYABLE JCP&L

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

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21 805133050015 0000000000000000000000000

ESTIMATED BILL

US ARMY FORT HONHOUTH HOPE RD

501 GRAND AVENUE

ASBURY PARK, NJ 07712

EATONTOWN NJ 07726

80 51 33 0500 1 5 ESTIMATED METER READING

GT - GENERAL SERVICE TRANSMISSION VOLTAGE

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE ON PEAK \$ 115,125.38 92,723.40 OFF PEAK DUTTOOR LIGHT 13.60 ENERGY ALL CHG & \$.002160- PER KHH 5,435.59CR CURRENT PERIOD CHARGES \$ 202,426.79

PREVIOUS BALANCE BALANCE AT BILLING CURRENT PERLOD CHARGES TRANSFER TO 635100000911 AMOUNT DUE

.00 202,426.79 202,426.79CR

.00

03/30/95 TO 05/01/95 FOR 32 DAYS

METER HETER READING KILOHATT REGISTERED BILLING MULTIPLIER NUMBER CURRENT PREVIOUS HOURS USED KH / KVAR KH / KVAR 50693195 G 95,400 50693195 G 2056 1,031,400 ONPK 4,700.7 4,700.7 1952 9000 50693195 G 162,000 50693195 G 2843 2696 9000 1,485,000 OFFPK 4,106.7 0.0 62018313 G 157,500 62018313 G 1,768,500 RVAH 2,826.9 2980 2801 9000 2.826.9 OUTDOOR LIGHT

2.931.300

IMPROVE THE VISIBILITY, SECURITY, AND AESTHETICS OF YOUR PROPERTY WITH AN ENERGY-EFFICIENT OUTDOOR LIGHTING SYSTEM. INSTALLING THIS TYPE OF SYSTEM IS SIMPLE AND COST-EFFECTIVE. HE OFFER LON MONTHLY RATES, FREE MAINTENANCE AND NO UP-FRONT INVESTMENT. HE EVEN OFFER GUARANTEED 10-DAY TURNAROUND TIME FOR OUR STANDARD INSTALLATION! CALL TODAY FOR YOUR FREE OUTDOOR LIGHTING SURVEY: NORTHERN REGIONAL SALES OFFICE 201-455-8942 SOUTHERN REGIONAL SALES OFFICE 908-502-4657

>>FOR ALL OTHER INQUIRIES OR TO REPORT AN OUTAGE PLEASE USE PHONE NUMBERS LISTED BELON

US ARMY FORT MONMOUTH CAMP WOOD

DATE APRIL 1995

HOPE RD

DISTRICT ASBURY PARK

EATONTOWN NJ

ELECTRIC SERVICE F	129 1	03-30 то	05-01		RATE	510
MEASURED DEMAND			DEMAND	CHARGE		
	4700.70 KW		_ KM 3		<u> </u>	
N PEAK	4700.70 KW	4700.7	0 KH 3 8.3	31	39062.82	
<u> </u>			_кн э			
			_кн э			\$ 39062.82
FF PEAK	4106.70 KW	RKVAH USE	1768500	PF	86	
		KVAR	2876.9	3 4	3	1215.56
	METER		ENERGY C	CHARGE		
ON PEAK 2056	OFF PEAK 2843	0	кин э		235.52	•
vious 1952	2696	1 <u>031400</u>	кин а .07	72340	74611.48	ON PEAK
™	147	1485000	кин э .06	52440	92723_40	OFF PEAK
ਸੌਵਾੜ 9000	9000	***************************************	кин э			
1031400	1485000		кин э		·	•
		•	кин э			
			кмн э		 .	
			кин э			
•			KMH 3	•		16 7570.40
•		ENERGY ADJUS	TMENT CHA	ARGE .	002160-PER	(WH <u>5435.42</u>
					SUB TOTA	L \$
					SUB TOTA	L \$ 202413 36
					•	
				OUTDO	OR AREA LIGHT	NG 13.43

US ARMY FORT MONMOUTH CAMP WOOD DIRECTOR OF PUBLIC HORKS SELFM-PH-R BLD 173 FORT MONMOUTH NJ 07703

(

* NO PAYMENT DUE * MAKE CHECK PAYABLE JCP&L

JERSEY CENTRAL P&L CO. PO BOX 193 ALLENHURST NJ 07711-0193

Н

ESTIMATED BILL

US ARMY FORT HONHOUTH HOPE RO

501 GRAND AVENUE

ASBURY PARK, NJ

EATONTOHN NJ

07724

07712

80 51 33 0500 1 5 -

GT-CRSS - GENERAL SERVICE

TRANSMISSION VOLTAGE

ESTIMATED METER READING

THIS IS YOUR CURRENT BILL CALCULATION

PAYMENTS/CHARGES SINCE LAST BILL

BASE CHARGE ON PEAK \$ 172,781.09 PREVIOUS BALANCE OFF PEAK 137,118.24 BALANCE AT BILLING CURRENT PERIOD CHARGES OUTDOOR LIGHT 13.60 * ENERGY AGU CHE & \$.001110- PER KHH 4,065.80CR TRANSFER TO 635100000911 CURRENT PERIOD CHARGES 305,847.13 AMOUNT DUE 06/29/95 TO 07/31/95

305,847,13 305,847.13CR

.00

.00

FOR 32 DAYS

METER NUMBER	METER CURRENT	READING PREVIOUS	HULTIPLIER	KILOHATT HOURS USED	REGISTERED KM / KVAR	BILLING <u>KH ∕ KVAR</u>
506931 9 5 6				189,000		
50693195 6	2421	2279	9000	1,467,000 ONF	K 7,002.9	7,002.9
50693195 G				315,000		
50693195 G	3344	3135	9000	2,196,000 OFFF	K 6,122.7	0.0
62018313 G				243,000		
62018313 G	3605	3350	9000	2,538,000 RVA	н 4,316.4	4,316.4
OUTDOOR LIGHT				. · 75		

PLEASE CONSERVE-HIGHER SUMMER RATES ARE IN EFFECT.

US ARHY FORT MONMOUTH CAMP WOOD

DATE JULY 1995

HOPE RD EATONTOWN NJ DISTRICT ASBURY PARK

ACCOUNT NO. 805133-0500-1 CK 5

-1

ELECTRIC SERVICE =	₹ > *	06-29 to 07-31	RATE	560
HEASU	RED DEMAND	DEMAND CHARG	Ε	•
· · · · · · · · · · · · · · · · · · ·	7002.90 KW	кн э	\$	
N PEAK	7002.90 KW	7002.90KH a 9.22	64566.74	
		ки а		
	· · · · · · · · · · · · · · · · · · ·	ки а		\$ 64566.70
FF PEAK	6122.70 KW	RKVAH USE 2538000	<u>PF</u> 85	
		KVAR 4316.4 3	_43	1856.05
KHS ON PEAK	DEFER OFF PEAK	ENERGY CHARGE	-	
_{зент} 2421	3344	0 KMH 3	<u>\$ 235.52</u>	,
vros 2279	3135	1 <u>467000</u> KH 2 - 072340	196122.78	ON PEAK
FERENCE 142	209	2 <u>196000</u> WH 3 .062440	137118.24	OFF PEAK
TIPLIER 9000	9000			
1467000	2196000			•
		——— 6 HHC3		
		C HBCI		
		(DHI 3		
		6 HKG		243476.54
		ENERGY ADJUSTMENT CHARGE	.001110-PER H	(WH <u>4065.93</u>
		·		
			SUB TOTA	il \$
			SUB TOTA	L \$ 305833.40
				<u> </u>

Attachment 8.3

Incremental Rate Calculations for Winter and Summer Bills

Jersey Central Power & Light Electric Rate Analysis Prepared by Entech Engineering, Inc.

Billing and Client Information

Client	Bldg. 2700 - Myer Center
Billing Year	1994
Billing Period	July
# of Billing Days	33
Enter "1" for Oct-May, "0" for Jun-Sep	0
Rate Schedule in Effect	Summer

Demand and Usage Information

Demand Measurements	
On-Peak Demand (kW)	7,020
Reactive Demand (kvar)	3,960
Usage Measurements	
On-Peak Period (kWh)	1,629,000
Off-Peak Period (kWh)	2,403,000

Special Adjustments

Energy Cost Adjustment	4 7- TT/T-	(\$0.00216)
Tr.nergy Cost Adiusimeni	i ner kwn	150.00/10#
zitelaj costitujustinen	, pc	(\$0.00210)

Jersey Central Power & Light Electric Rate Analysis Prepared by Entech Engineering, Inc.

Duplicated Electric Bill

				47.11		
Customer Charge	1	Bill	<u>@</u>	\$235.52	Per Bill	\$235.52
On-Peak Demand Charge	7020	kW	<u>a</u>	\$9.22	Per kW	\$64,724.40
Reactive Demand Charge	3960	kvar	<u>a</u>	\$0.43	Per kvar	\$1,702.80
On-Peak Usage Charge	1,629,000	kWh	<u>a</u>	\$0.072460	Per kWh	\$118,037.34
Off-Peak Usage Charge	2,403,000	kWh	\tilde{a}	\$0.062560	Per kWh	\$150,331.68
Energy Cost Adjustment	4,032,000.00	\$/kWh	\check{a}	(\$0.002160)	Per kWh	(\$8,709.12)
Outdoor Lighting Charge	1	Bill	\check{a}	\$13.58	Per Bill	\$13.58
Current Period Charges:					\$326,336.20	

Calculated Incremental

Incremental Cost per kW	\$9.22
Incremental Cost per Reactive Demand kvar	\$0.43000
Incremental Cost per On-Peak kWh	\$0.07246
Incremental Cost per Off-Peak kWh	\$0.06256

Calculated Billing Statistics Based on Incremental Costs

Demand Cost	\$64,724.40	Energy Cost	\$268,369.02
% Demand	19.8%	% Energy Cost	82.2%
	Power Factor		
		Penalty:	\$1,702.80

Current Electric Tariff (Rate GT)

	Summer	Winter
Customer Charge (\$/Bill)	\$235.52	\$235.52
On-Peak Demand Charge (\$/kW)*	\$9.22	\$8.31
Reactive Demand Charge (\$/kvar)*	\$0.43	\$0.43
On-Peak Usage Charge (\$/kWh)*	\$0.07246	\$0.07246
Off-Peak Usage Charge (\$/kWh)*	\$0.06256	\$0.06256
Energy Cost Adjustment Charge (\$/kWh)	(\$0.00216)	(\$0.00216)
Outdoor Lighting*	\$13.58	\$13.58

Electric Bill Calculation

	Actual	Demand , kW	Reactive Demand	On-Peak Usage	Off-Peak Usage
Calculation Description	Billing	Minus 1kW	Minus 1 kvar	Minus 1 kWh	Minus 1 kWh
On-Peak Demand (kW)*	7,020.0	7,019.0	7,020.0	7,020.0	7,020.0
Reactive Demand (kvar)*	3,960.0	3,960.0	3,959.0	3,960.0	3,960.0
On-Peak Usage (kWh)*	1,629,000	1,629,000	1,629,000	1,628,999	1,629,000
Off-Peak Usage (kWh)*	2,403,000	2,403,000	2,403,000	2,403,000	2,402,999
Total Usage (kWh)	4,032,000	4,032,000	4,032,000	4,031,999	4,031,999
Energy Cost Adj. (\$/kWh)	(\$0.00216)	(\$0.00216)	(\$0.00216)	(\$0.00216)	(\$0.00216)
. -	ļ				
Cost Calculation					
Customer Charge per month	\$235.52	\$235.52	\$ 235.52	\$235.52	\$235.52
On-Peak Demand Charge	\$64,724.40	\$64,715.18	\$64,724.40	\$64,724.40	\$64,724.40
Reactive Demand Charge	\$1,702.80	\$1,702.80	\$1,702.37	\$1,702.80	\$1,702.80
On-Peak kWh Charge	\$118,037.34000	\$118,037.34000	\$118,037.34000	\$118,037.26754	\$118,037.34000
Off-Peak kWh Charge	\$150,331.68000	\$150,331.68000	\$150,331.68	\$150,331.68	\$150,331.62
Subtotal:	\$335,031.74	\$335,022.52	\$335,031.31	\$335,031.67	\$ 335,031.68
Energy Cost Adjustment	(\$8,709.12)	(\$8,709.12)	(\$8,7 09.12)	(\$8,709.12)	(\$8,7 09.12)
Outdoor Lighting*	\$13.58	\$13.58	\$13.58	\$13.58	\$13.58
Total Current Bill:	\$326,336.20	\$326,326.98	\$326,335.77	\$326,336.13	\$326,336.14
Incremental Costs:	n/a	\$9.22	\$0.43	\$0.07246	\$0.06256

Incremental Cost Check

Cost Calculations Using Incr	ementals				
On-Peak Demand Charge	7,020.0	kW	<u>@</u>	\$9.22	\$64,724.40
On-Peak Usage Charge	1,629,000	kWh	<u>a</u>	\$0.07246	\$118,037.34
Off-Peak Usage Charge	2,403,000	kWh	<u>@</u>	\$0.06256	\$150,331.68
	Total Calculated Billin	ng Usin	g Inci	ementals:	\$333,093.42
	Actual (Curren	t Peri	od Charges:	\$326,336.20
İ	Cost Variance (Act	ual Mi	nus In	cremenal):	(\$6,757.22)
	Percent	t Varia	nce (Var/Actual):	-2.1%

Billing and Client Information

Client	Bldg. 2700 - Myer Center
Billing Year	1995
Billing Period	April
# of Billing Days	32
Enter "1" for Oct-May, "0" for Jun-Sep	1
Rate Schedule in Effect	Winter

Demand and Usage Information

Demand Measurements	
On-Peak Demand (kW)	4,701
Reactive Demand (kvar)	2,827
Usage Measurements	
On-Peak Period (kWh)	1,031,400
Off-Peak Period (kWh)	1,485,000

Special Adjustments

Energy Cost Adjustment per kWh	(\$0.00216)

g:\projects\4130.05\utilbil\elebilb0.wk4

Duplicated Electric Bill

Customer Charge	1	Bill	<u>@</u>	\$235.52	Per Bill	\$235.52
On-Peak Demand Charge	4700.7	kW	(a)	\$8.31	Per kW	\$39,062.82
Reactive Demand Charge	2826.9	kvar	<u>@</u>	\$0.43	Per kvar	\$1,215.57
On-Peak Usage Charge	1,031,400	kWh	<u>a</u>	\$0.072340	Per kWh	\$74,611.48
Off-Peak Usage Charge	1,485,000	kWh	<u>a</u>	\$0.062440	Per kWh	\$92,723.40
Energy Cost Adjustment	2,516,400.00	\$/kWh	<u>a</u>	(\$0.002160)	Per kWh	(\$5,435.42)
Outdoor Lighting Charge	1	Bill	\tilde{a}	\$13.43	Per Bill	\$13.43
			(Current Period	Charges:	\$202,426.79

Calculated Incremental

Incremental Cost per kW	\$8.31
Incremental Cost per Reactive Demand kvar	\$0.43000
Incremental Cost per On-Peak kWh	\$0.07234
Incremental Cost per Off-Peak kWh	\$0.06244

Calculated Billing Statistics Based on Incremental Costs

Demand Cost	\$39,062.82	Energy Cost	\$167,334.88
% Demand	19.3%	% Energy Cost	82.7%
		Power Factor	
		Penalty:	\$1,215.57

Current Electric Tariff (Rate GT)

	Summer	Winter
Customer Charge (\$/Bill)	\$235.52	\$235.52
On-Peak Demand Charge (\$/kW)*	\$9.22	\$8.31
Reactive Demand Charge (\$/kvar)*	\$0.43	\$0.43
On-Peak Usage Charge (\$/kWh)*	\$0.07234	\$0.07234
Off-Peak Usage Charge (\$/kWh)*	\$0.06244	\$0.06244
Energy Cost Adjustment Charge (\$/kWh)	(\$0.00216)	(\$0.00216)
Outdoor Lighting*	\$13.43	\$13.43

Electric Bill Calculation

	Actual	Demand , kW	Reactive Demand	On-Peak Usage	Off-Peak Usage
Calculation Description	Billing	Minus 1kW	Minus 1 kvar	Minus 1 kWh	Minus 1 kWh
On-Peak Demand (kW)*	4,700.7	4,699.7	4,700.7	4,700.7	4,700.7
Reactive Demand (kvar)*	2,826.9	2,826.9	2,825.9	2,826.9	2,826.9
On-Peak Usage (kWh)*	1,031,400	1,031,400	1,031,400	1,031,399	1,031,400
Off-Peak Usage (kWh)*	1,485,000	1,485,000	1,485,000	1,485,000	1,484,999
Total Usage (kWh)	2,516,400	2,516,400	2,516,400	2,516,399	2,516,399
Energy Cost Adj. (\$/kWh)	(\$0.00216)	(\$0.00216)	(\$0.00216)	(\$0.00216)	(\$0.00216)
Cost Calculation		-			
Customer Charge per month	\$235.52	\$235.52	\$235.52	\$ 235.52	\$235.52
On-Peak Demand Charge	\$39,062.82	\$39,054.51	\$39,062.82	\$39,062.82	\$39,062.82
Reactive Demand Charge	\$1,215.56	\$1,215.56	\$1,215.13	\$1,215.56	\$1,215.56
On-Peak kWh Charge	\$74,611.47600	\$74,611.47600	\$74,611.47600	\$74, 611.40366	\$74,611.47600
Off-Peak kWh Charge	\$92,723.40000	\$92,723.40000	\$92,723.40	\$92,723.40	\$92,723.34
Subtotal:	\$207,848.78	\$207,840.47	\$207,848.35	\$207,848.7 0	\$207,848.71
Energy Cost Adjustment	(\$5,435.42)	(\$5,435.42)	(\$5,435.42)	(\$5,435.42)	(\$5,435.42)
Outdoor Lighting*	\$13.43	\$13.43	\$13.43	\$13.43	\$13.43
Total Current Bill:	\$202,426.79	\$202,418.48	\$202,426.36	\$202,426.71	\$202,426.72
Incremental Costs:	n/a	\$8.31	\$0.43	\$0.07234	\$0.06244

Incremental Cost Check

Cost Calculations Using Incr	ementals				
On-Peak Demand Charge	4,700.7	kW	<u>@</u>	\$8.31	\$39,062.82
On-Peak Usage Charge	1,031,400	kWh	<u>@</u>	\$0.07234	\$74,611.48
Off-Peak Usage Charge	1,485,000	<u>k</u> Wh	<u>@</u>	\$0.06244	\$92,723.40
	Total Calculated Billin	ng Usin	g Inci	ementals:	\$206,397.69
	Actual (Curren	t Peri	od Charges:	\$202,426.79
Cost Variance (Actual Minus Incremenal):					(\$3,970.90)
Percent Variance (Var/Actual):					-2.0%

Attachment 8.4

Jersey Central Power & Light (JCP&L) Electric Rate Schedule

SERVICE CLASSIFICATION GT GENERAL SERVICE TRANSMISSION

APPLICABLE TO USE OF SERVICE FOR: Service Classification GT is available for general service purposes for commercial and industrial customers.

CHARACTER OF SERVICE: Three-phase service at transmission voltages.

RATE PER BILLING MONTH:

(a) Customer Charge: \$235.52

(b) Demand Charge:

\$9.22 per maximum KW during June through September on-peak hours \$8.31 per maximum KW during October through May on-peak hours

- (c) Kilovolt-Ampere Charge: \$0.43 per KVAR based upon the 15-minute integrated KVAR demand which occurs coincident with the KW demand used for Demand Charge purposes. (See Part II, Section 5.05)
- (d) Base Rate Energy Charge:
 7.234¢ per KWH during on-peak hours
 6.244¢ per KWH during off-peak hours
- (d) Rate Adjustment Charges: All KWH supplied under this Service Classification are additionally subject to the combined credit/charge provided under ENERGY ADJUSTMENT CLAUSE (Rider EAC) and DEMAND SIDE FACTOR (Rider DSF). Credits/charges provided under any other riders are already included within the stated Base Rate Energy Charge.

MINIMUM CHARGE PER MONTH:

Monthly bills computed under this service classification shall not be rendered for less than the sum of the current month's: Customer Charge, Base Rate Energy Charge, Kilovolt-Ampere Reactive Charge and Rate Adjustment Charges, all as determined above; plus \$2.74 per KW for the highest on-peak or off-peak demand created in the current and preceding eleven months (but not less than the Contract Demand). When the maximum on-peak demand created in the current and preceding eleven months has not exceeded 3% of the maximum off-peak demand created in the current and preceding eleven months, however, the charge per KW specified above shall be reduced by \$1.14.

(continued)

Issued: December 30, 1994

Effective: January 1, 1995

Issued by Michael P. Morrell, Vice President-Regulatory and Public Affairs 310 Madison Avenue, Morristown, NJ 07962-1911

Filed pursuant to Order of Board of Public Utilities in Docket No. AX91111712 dated December 26, 1991

SERVICE CLASSIFICATION GT GENERAL SERVICE TRANSMISSION (continued)

DETERMINATION OF DEMAND: The KW during on-peak hours used for billing purposes shall be the maximum 15 minute integrated kilowatt demand created during the on-peak hours each billing month calculated to nearest one-tenth KW. The off-peak demand shall be the maximum demand created during the remaining hours. A Contract Demand not less than the actual monthly demands may also be specified for mutually agreeable contract purposes.

DEFINITION OF ON-PEAK AND OFF-PEAK HOURS:

The hours to be considered as on-peak are from 8 a.m. to 8 p.m. prevailing time Monday through Friday. All other hours including weekend hours will be considered off-peak. The Company reserves the right to change the on-peak hours from time to time as the on-peak periods of the supply system change. The off-peak hours will not be less than 12 hours daily.

TERM OF CONTRACT: None, except that reasonable notice of service discontinuance will be required. Where special circumstances apply or special or unusual facilities are supplied, contracts of one year or more may be required.

TERMS OF PAYMENT: Bills are due when rendered and become overdue when payment is not received by the Company on or before the due date specified on the bill. Overdue bills thereafter become subject to a late payment charge as described in Section 3.19, Part II.

SERVICE CHARGE: A Service Charge of \$14.00 shall be applicable for initiating service to a customer under this Service Classification (see Part II, Section 2.01). A \$54.00 Service Charge shall be applicable for final bill readings requested to be performed other than during the normal working hours of 8 AM to 4:30 PM, Monday through Friday. (See Part II, Section 3.13)

RECONNECTION CHARGES: A Reconnection Charge, applicable after a discontinuance requested by the customer or because of a default by the customer, of \$22.00 is applicable to service reconnections which can be performed at the meter during the normal working hours of 8 AM to 4:30 PM, Monday through Friday. A Reconnection Charge of \$54.00 is applicable to service reconnections which can be performed at the meter during all other hours. The charge for all reconnections which cannot be performed at the meter shall be based upon billing work order costs. (see Part II, Section 8.04).

(continued)

Issued: February 26, 1993 Effective: February 26, 1993

Issued by Michael P. Morrell, Vice President-Materials, Services and Regulatory Affairs 310 Madison Avenue, Morristown, NJ 07962-1911

Filed pursuant to Order of Board of Regulatory Commissioners in Docket No. ER91121820J dated February 26, 1993





SERVICE CLASSIFICATION GT GENERAL SERVICE TRANSMISSION (continued)

RECONNECTIONS WITHIN 12 MONTH PERIOD: Customers which request a disconnection and reconnection of service at the same location within a 12 month period shall not be relieved of Minimum Demand Charges resulting from demands created during the preceding eleven months, even though occurring prior to such disconnection.

Customers which request more than one disconnection and reconnection of service at the same location within a 12 month period shall be subject to the conditions specified above for the first such period of disconnection. In addition, for subsequent periods of disconnection, the customer shall be required to pay an additional Reconnection Charge equivalent to the sum of the Minimum Demand Charges, determined in accordance with the conditions specified in the preceding paragraph, for each month of that subsequent period.

SPECIAL PROVISIONS:

- (a) Commuter Rail Service: Where service is supplied to interconnected traction power accounts for a commuter rail system, such accounts shall be conjunctively billed based upon coincident demands. This Special Provision also modifies the DEFINITION OF ON-PEAK AND OFF-PEAK HOURS for Demand Charge purposes only, such that the following Federal Holidays are considered off-peak the entire day: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. In addition, the period from 8 AM to 10 AM prevailing time Monday through Friday shall be considered as off-peak for Demand Charge purposes only. The Company reserves the right to change the on-peak hours from time to time as the on-peak periods of the supply system change.
- (b) High Tension Service: Where service is supplied at 230 KV, the Rate per Billing Month shall be reduced \$0.23 per KW of Demand Charge and 0.146¢ per KWH of Base Rate Energy Charge to reflect the reduced line losses associated with service at this voltage level.

ADDITIONAL MODIFYING RIDERS: This Service Classification may also be modified for PUBLIC UTILITY EXEMPTION FROM STATE TAX COLLECTION (Rider TXE), COGENERATION AND SMALL POWER PRODUCTION SERVICE (Rider QFS) and STANDBY SERVICE (Rider STB). Curtailable credits are available under OPTIONAL CURTAILABLE SERVICE (Rider CURX) and CURTAILABLE SERVICE (Rider CUR).

STANDARD TERMS AND CONDITIONS: This Service Classification is subject to the Standard Terms and Conditions of this Tariff for Electric Service.

Issued: February 26, 1993 Effective: February 26, 1993

Issued by Michael P. Morrell, Vice President-Materials, Services and Regulatory Affairs 310 Madison Avenue, Morristown, NJ 07962-1911

Filed pursuant to Order of Board of Regulatory Commissioners in Docket No. ER91121820J dated February 26, 1993

Attachment 8.5

Building 2700 Fuel Oil Bills

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Directorate of Installation Supply Services Division Fuel Oil Branch Fort Monmouth, NJ 07703-500		14. MARKED FOR	348 ez 2700	æDē
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33-462 Burner 0i1 //2	· · · · · · · · · · · · · · · · · · ·	7,460.7		\$,819.35
PROCE A ORIGIN POA ACCEPTANCE of Isled II on made by me or under my supervision inform to contract, except as noted her opporting documents. DATE SQUATURE OF AUTH COV	lems has and they made by me or under my surem or or or or occurrents.	PIATURE OF AUTH GOVT PEP	Ouantities shown in coapparent good condition Ouantities shown in coapp	TYPETS USE THE TOTAL THE
10 OFFICE 3. CONTINUED USE ONLY	NO TILE)))))))))))	timeug woled bernes	y shaped and encircle. 5HZS 4206-0050

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AND TECEIVING	REPORT	4. B/L	600-94 D- 1	4129	•		2V 58			6 ACCEPTAN	CE POINT D
6/ 8	Dep-94	101		·				NET .	.30		•
Premier OSG T/A CPO 673 Brunswic Rahway, NJ	k Ave., Box	1071A,.		· •	ATTII: Camero Alexar	se Fuel DFAS-C xn Stat xdria,	Supply O/DFSC-R ion Blog VA 2230	8FFP 18 : 14-6160)	-	
JULY DE LLON & and	then 61 CODE		FOB:	•	1		BE MADE		r Sorvice Col	1	ton
· · · · · · · · · · · · · · · · · · ·	·				Stock Fuels ATTN: Colum	Fund D Account DFAS-0 bus, Of	irectora iting and	ate d Paym P.O. 1	g Service, Col ents Division Box 182317	article.	
34분들 10	CODE	ı	•		14. MARK	ED FOR			.	=	
Directorate of Supply Service Fuel Oil Brank Fort Hamouth	es Division : ch		CS				Be	Sel,	2700		· .
ITEU IXO.	STOCK/PA (hote	re number of at	ibong containers - ontainer number.)	DESCRIPT Type of	ЮН	17。 QU/ SHP/	VIIIIY. REC'D	18. Ur a T	19. UNIT PRICE	20.	HUNT
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₹E COLUMO			Defen	se Fue	1 Supply	Center	CODE	
T/A CPO			Camer	on Sta	CO/DFSC-I	18:	alt.	
673 Bru Rahway,	nswick Ave., Box NJ 07065	1071A,	Λ1exa	ndria,	VA 2230	D4-6160		
יאנגפט נוסאו	Of other then 9) CODE	FOB:	1		L BE MADE		CODE	
•			Defer Stock	ise Fin : Fund	ance//co Director	ountiry ate	g Service, Colu	ள்ப்பு Center
			Fuels	Accou	nting an	d Paym	ents Division	144 144 144 144 144
			Colum	ibuš, C	H 43218		30x 182317	· · · · · · · · · · · · · · · · · · ·
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	ite of Installation rvices Division			Be	ر بهده	320	4 2700	
Fuel Oil	Branch cuth, NJ 07703-5	5000			J.			
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-1.	PRI	OCUREAENT QUALITY ASSURANCE		<u>}· · · </u>		22.	RECEIVER	s us∈
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÷	9.	7X1930.5CFO 01 26.1 S33150 () •	'RR •			W15HZ\$	° 4234-0058°
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4	22 Dog 94	4. B/L		•	3	DESCOUR	NET .	30	
TE COULDED	ZT . C00€			To ADMINIS	o Fipl	Simply	Center		1
T/A CPO	WG Supply Co., wick Ave., Box U 07065	1071A,.		ATTII: Canero Alexar	DFAS-CO on Stati odria, V	I/DFSC-I on Blog A 2230	FFP 1 8 : 14-6160		
THE FROM OF	other than 9] CODE		FOB:	1	ENT WILL			eope Columbia	rhus Coaton
·		• .		Stock Fuels ATTN: Colum	Fund Di Account DFAS-CO bus, OH	irector ting an D-SFFP,	ate d Paym P.O. I	g Service, Colu ents Division Box 182317	
€55 10	. coos	i		14. MARK	ED FOR			CO 0-5	
upply Servuel Oil Br	e of Installatio vices Division canch uth, NJ 07703-5		cs A			ß	bos.	00 حد.	
ਜ਼ਵਮ ।		RT NO.	DESCRIPTION OF CONTRACT OF THE PERSON OF THE	IION	17. QUA SH₽/F	MITY.	18. UNIT	19. UNIT PRICE	20. AMOUNT
POA AC	A ORIGIN .	CUREMENT	DUALITY ASSURANCE B. DES B. DES ACCEPTANO Made by me or under my st contract, except as noted	MORNISMO B	nd they co	as been	BOD BI BO	RECEIVER!	7 were received in
oxung docume		· · · · · · · · · · · · · · · · · · ·	9-23-44	é. S.	of fe	!!			LE OL WILH COAL LES.
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5	23 Py 94	тон 1 10 2 10 10 10 10 10 10 10 10 10 10 10 10 10			NET .	:30	
T/A CPO 673 Brui	O&G Supply Co., nswick Ave., Box NJ 07065	1071A,	ATTI1: Camero	se Fuel Supp DFAS-CO/DFSO on Station B odria, VA 2	RFFP log 8		
455 TO	gramma shen 9) CODE	FOB:	Defen Stock Fuels ATTN:	Fund Direct Accounting DFAS-CO-SFF bus, OH 432	ccounting orate and Paym P, P.O.	cose g Service, Colu ents Division Box 182317	
umply Se uml Oil	te of Installation rvices Division	n Logistics		Y:	· .	٥ ٥ ٦٠٠	•
ग्रह्म १४).	16. STOCK/PA	RT NO. DESCRIPT Is number of shipping containers - type of container - container number.)	пюн	OUAHITTY SHIP/RECD	UNIT	- UNIT PRICE	AMOUNT
33-462	Burner Oil #2	\$ 4.	•	7,501.4	GL.	.78	\$5,851.09
	ticher:	± 54827				74	
	· Pfl	OCUREJAENT OUALITY ASSURANCE			22.	RECEIVER	
ound doors		litems has POA M ACCEPTANC made by me or under my st charer or on contact, except as noted documents.	bervision a	nd they contorm	DAIE H	NAME	
DATE DHAME OFFICE	SCIATURE OF AUTHO	TYPED NAME	ONATORE OF	AUTH COVI FEE	me2 hum	quantky received by to as quantky received by to as quantky shoped, it is different, enter acted below quantky sho	tual quantity re-
			2.4		16:	W15HZ	7134,0036

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2 EPUENT NO.	3. DAIE SIMPED	4. B/L 1CH	-				œœun	NET		
T/A CP0 673 Bru	OlG Supply Co.,	I 1071A,. _.	÷		Defen ATTIV: Camer	se Fuel S DFAS-CO, on Statio ndria, V	/CFSC-R on Blog	FFP 8	: , _i ,	
SHEET TO	Or other shart 9) CODE		FOB:		Defer Stock Fuels ATTN:	Fund Di Account DFAS-CO bus. CH	ce//ccc rectora ing and -SFFP,	untin ite I Paym P.O. I	g Service, Col ents Division Box 182317	untsus Center
Directora Supply Se Fuel Oil	le of Installation		cs •/				Spa.	ey =	2700	
ITEM HO.	18. STOCK/PAI	e number of an	Dicong containers - type or rotainer number,)	ESCIOPT /	ЮН	17. QUAN SHP/RI	mr. I	8. UNIT	19. UNIT PRICE	AMOUNT
33-462	Burner Oil //2				•	7,53	1.7	GL.	.78	5,874.73
	TICKET NR. 55491	GALL: 7 <i>5</i> 3	ons 31.7						:	
	e e	. •	• •	• •	·				•	
	at .				•			• .	·	\$ 8 50 y
1.	PNC	CULENEUL	QUALITY ASSURANCE	E		·		22.	RECEIVES	rs use
seed made by m	A ORIGIN . CCEPTAICE of Isled in or under my supervisited, except as noted in onics.	liems has on and they erest or on	POA ACCI	B. DEST EPTAYCE or my sux or moled	of Islection of the control of the c	or on su	s been	Ouantitic apparent LO-5 DATE RE TYPED AND OF	CEIVED SQUA	17 were received in cool as noted. The Lillium of Auth Covi new
DATE TYPED HAME VID OFFICE	SCHATURE OF AUTH C	UVT PEP	TYPED NAME .		· /	WITH GOVT		Same Mark,	puantky received by as quantky shipped If different, enter a d below quantky sh	ctual quantity re-
ZZ, COHITACIO		X1930.5CF	0 01 26.1 53315	50 00	•	RR			W15HZ	S 4270-0060

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	INSPECTION AND	. DL/600-	94-D- 4129			2V 60			1 1 1 6 ACCEPTANCE PORT
	NG REPORT								D
2 amubil 110.	7 Oct 94	4. B/L 104		•	1 - 5	оѕсоил	NET .	30	
T/A CPO 673 Brur	OSG Supply Co., nswick Ave., Box NJ 07065	1071A,.		ATTIV: Camero	se Fuel DFAS-C(on Stati	Supply I/DFSC-R on Blog /A 2230	FFP 8 :		
SMESTED TO	() other than 0) CODE		FOB:	Defen Stock Fuels ATTN:	se Fina Fund D Accoun DFAS-Ci bus, CH	irectora ting and	xuntiry ite i Payme P.O. I	Service, Colu ents Division Box 182317	\$ - \$.
Supply Sei Fuel Oil (te of Installation rvices Division Branch cuth, NJ 07703-!			12			·.	D. 2700	
ITEM NO.	18. STOCK/PA		DESCRIPT containers - type of er number.)	HON	17. QUA SH#P/I	HITTY .	UNIT	UNIT PRICE	AMOUNT
33-462	Burner 0i1 <u>//</u> 2	•	_	•	14,8	92	GL.	.78	11,615.76
•	TICKET NR. 55700 55490	GALLONS 7485 7407	_		٠			***	
	e		UTY ASSURANCE	•			22.	RECEIVER	s 11cs
- xeen made by m	A CHIGH . CCEPTANCE of Islem to or under my supervision, except as noted	litems has made they herest or on doc		ADDITION B	nd they co	oniomini to	Quantil	es shown in column i good condoon excelled Schill Schill NAME	17 were received in
DATE TYPED NAME VIO OFFICE	SCIATURE OF AUTH	COVI REP	DATE SX	CHATURE OF	WITH 00V	त १६०	enez murk	ouaniky received by it is quantity shoped, if dillerent, enter acid below quantity sho	tual quantity re-
ZJ. CONTRACTO	ON USE ONLY			00000///	'RR	<u> </u>	• • • • • • •	W15HZS	
. Ti	•		2000 LMZ2 200 - 7,49				· •	79 - 430 4	- 2017
	· 139	عرص ع	700-7,4	019	Some			•	

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	INSPECTION AND ING REPORT	. DL/6	00-94-D- 4129 .		· 2V 60		<i>:</i> .	8 ACCEPTANCE POINT
ZEPLENT NO.	3. DATE STOPED	4. B/L			5 DESCOUR	กายพร		·
4	17 Oct 94	104				NET .	<u>`</u> 30	
TOWE COTTING	TON COOE	<u> </u>		10 ADMINI	siemen av se Fuel Supply	Conter	coo	
T/A CPO 673 Bru	O&G Supply Co., nswick Ave., Box NJ 07065	1071A,.		ATTIV: Camer	DFAS-CO/DFSC- on Station Bld ndria, VA 223	кни lg 8 :		
SHULED LUON	Of current comes of COOR		FOB:		ENT WILL BE MAD		CODE	•
	•				nse Finance/Aco k Fund Director		g Service, Col	unbus Center
		*		Fuels ATTN: Colum	Accounting are DFAS-CO-SFFP thus, OH 43218	nd Paym , P.O.	Box 182317 -	
I. SIEFFED 10				14. MARI	ED FOR			=
Supply Se Fuel Oil	ate of Installati Prvices Division Branch Brauth, NJ 07703-	•	:s - //		B4	rey 2		
г. ПЕЧ 140.	16. STOCK/P/	are number of and	DESCR cong containers - type of namer number.)	PIKH	OUNTITY + SHE/RECD	18. UNIT	UNIT PRICE	20
33-462	Burner Oil //2) 		•	7,487.1	GL	.78	5,839.94
	TICKET NR.	GALLO	INS .	•			·	
	56289	748	7,1"					
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<u> </u>	} -				<u>]· · · </u>	22.	RECEIVED	is lies
1.		OCULENEUS (DUALITY ASSURANCE	ESTINATION		Quantiti	esi shown in column	17 were received in
Seen made by t	A ORIGIN . ACCEPTANCE of Isle ne or under my supervi mact, except as noted monts.	sion and they i	7777	NCE of Isle	d Items has been	10-17		L Smytte
•	•		1 Soulong	. C. >>	-of fext	TYPED		220 220 200 200
0116		20:2 57	10-17-94	SCNATIAS OF	E WITH GOVT INCEP	AND O		
DATE TYPED NAME	SCHATURE OF AUTH	COALLES.	TYPED NAME	•		mazk		the Government is the fixed called by { > } ctual quantity re-
23. CONTRACT		•	AID TITLE	000000 /*	/nn	1 cent	ва выом возтку зл. W15HZ	
	٠ ي	7X4930.5CF	0 01 26.1 S33150	000000//	/RR		MISHA	S 4270-0060

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/	/	- INSPECTION	DL/600- 94 -	D- 4129	,	3	2V 60		•	1 ACCEPT	MCE POINT
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	JEPHENT IN.	3. DATE SHIPPED	4. B/L		•	7.	o oscourn	ายพร	· .	•	
	5	18 Garat	TCH					NET .	- ,-		
	TOLE COTTING	•		•	Defen	SIEMED BY	Supply	Center		DE	
	T/A CPO 673 Bru	O&G Supply Co., Inswick Ave., Box NJ 137065	1071A,		ATTIV:	DFAS-CC on Stati)/DFSC-R ion Blog /A 2230	· 8 ·	- 13 t.s		aPa .
	MOUI GELING	() other shan () CODE		F08:	1		BE MADE		; cc	1.	
		•			Stock Fuels ATTN:	Fund D Account DFAS-C	irectora ting and	ite I Paym P.O. I	g Service, Co ents Division Box 182317		nter
	I. SI4#50 TO	. coos	<u> </u>		14. MARK		102.10	<u> </u>	a	20=	
	Supply Se Fuel Dil	te of Installation Provices Division Branch Couth, NJ 07703-5		## .	·	1	Book	\	700		
	ITEM	16. STOCK/PA	RT NO.	DESCRIP	TION	17.	ишү.	18.	19.	20.	
	<u>NO.</u>		CONCERNS - CONCERNS - RUTH			SH#P/I	ECD	UNIT	UNIT PRICE		OUNT
	33-462	Burner Oil //2	. ·		•	7,55	5.7	GL.	.78	5,80	13.45
		TICKET NR.	GALLONS	;	•		1				
		56290	7555.7				ĺ		•		
. •		4			•	-		•	,		51 \$1.
	1.	PRIC	CUREMENT DUALTY A	SSURANCE				22.	RECEIVE	ER'S USE	
	POA Deen made by monitorin to continuoporting docum	arcedi es noted r	litems has poA made by the contract.	ACCEPTANO	DINATION E of Islee Exercision a therein	I Items had they cook on as	as been	Quantitle apparent	ri shown in column in colu	n 17 were rec xceol as noted	Jeil
	DATE	SCIATURE OF AUTH O		-94	TINIUTE OF	of fo	[TYPED I	HWE V	ATURE OF AUTI	covi je
	TYPED HAME	•	TYPED NO.		.,			same mark	naniky received b sa quaniky shoo if chilerent, enter d below quaniky s	ed, Indicate by actual quantity	10-1
į	3. CONTRACTO		7X1930.5CF0 01 26	,	00000//	RR			W15	ZS 427	0-0060
	. 72	22896.5	730,000	000 LM	・マママ	.5	5LJ	ط ۱۱ ⁻ ب	99-4	1304-	2014
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	L INSPECTION AND ING REPORT	DL/6	00-94-D- 4129 _.		2V 60	U JEUNS	-	8 ACCEPTANCE POINT
8	27 Oct 94		**************************************	. •		NET .	. [30	
THE CONTRO			·		SIERED BY		CODE	
T/\h.CP0				ATTII: Caner	se Fuel Supply DFAS-CO/DFSC- on Station Bld ndria, VA 223	RFFP g8	•	•
Rahway,	nswick Ave., Box NJ U7065	10/17,.						
שטחו פביחיופ	Of other than \$1 CODE		FOB:	i	ENT WILL BE MAD		CODE	
	•	gest .			ise Finance/Acc . Fund Director		g Service, Colu	nbus Center
	نت منابع روزها		,	Fuels	Accounting ar DFAS-CO-SFFP,	nd Paym , P.O.	ents Division Box 182317	
I. SHEFFED TO	CODE	1			ibus, OH 43218	0232	con	
	ate of Installation Branch	n Logistic	S ,,,,,		Bus	ر بر کا بر	2700	
	mouth, NJ 07703-5	6000					•	
TEM NO.	18. STOCK/PA	e number of ship	DESCRI prig coxument - type of tener number.)	PIKON	OUNTITY + SHP/RECD	18. UNIT	19 UNIT PRICE	AMOUNT
33-462	Burner Oil //2			•	7,426	GL.	78	5,792.28
	TICKET NR.	GALLO	NS					: :
	56742	74:	26					
		تــــ 	¥ d. ••••••••••••••••••••••••••••••••••••					
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- xeen made by n	Taci, except as noted t	ion and they in	7 77 -	KE of Isle	d Items has been not they conform to or supporting	DOD W BY	27-94 T 2	d front the
			Buban	C. 2	ffer	TYPED	NAME	THE OF AUTH COVE THEP
DATE	SCHATURE OF AUTH O	OVI REP	10-37-94	SCHATURE OF	WIH DOVI PEP	AND O		na Gavernment is the
TYPED NAME	•		TYPED NAME AND TITLE	•		same muni	e as quantity shipped, Lift different, enter act and below quantity ship	indicate by (🛩) 🎉
23. CONTINCTO		7X4930\5CF(0,01 26.1 533150	000000//	rr /		W15HZS	4270-0060
_	•	** <u>*</u>		•				
- · 72	2896, 53	0. QQ	000 LMZ	2225	51511	6.	99-4304	L- 2011

, (RECEIVIN	INSPECTION AND REPORT	D L/60	0-94-D- 4129	· ·	, j		2V 60	TETERS.	2	o ACCEPTANCE	
3	APMENT NO.	J. DATE STIPPED	4. B/L		. •=:	•,	' -	5 JUSTICO 11	NET .	'an /	•	
	9	128-Cur94	101	•				**	11C1	. 	== -	
7	PATE CONTINC					Defens	p Fipl	Supply	Center	-"		بدد
٠.	T/A CPO 673 Brun	O&G Supply Co., swick Ave., Box NJ 07065	1071A,,	-		Alexar	xdria,	0/DFSC-R tion Blog VA 2230	4-6160	CODE		
	S UPPED FROM (y onner men ej CODE		FOB:				BE MADE		Service, Colu	,	er -
		eda Jerman		- in .		Stock Fuels ATTN: Colum	Fund Accou DFAS- bus, O	Directora nting_and CO-SFFP, H 43218	ate i Payme P.O. E	ents Division lox 182317	.5	
ī.	SHEFED TO	C005	·		į	14, MARK	ED FOR		**.		-1	ः <u>।</u> -स
	Supply Sei Fuel Dil I	te of Installation rvices Division Branch cuth, NJ_07703-5	<u> </u>	s . //		•	Bo	age - //		00 CE 4.		
<u>.</u>	печ	18. STOCK/PA	re number of ship	ong coreaners - type of	CISETI	ON .	17. DL	ANTITY +	IB. UNIT	19. UNIT PRICE	20	nt :
-	33-462	Burner Oil #2	container - cont	ener riumoer.)		•		718.1	GL.	.78	\$ 10,07	16.12
		TICKET NR.	GALLO	NS .			}					14.5
	.	57070	731			•				•		
		57071	560	35	.=.	,		27.43		••	1 .	** • *
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ITEM NO.	16. STOCK/PA	RT NO. 45 a number of shipping co container - container in		DÖN	UNITTY。 SHIP/RECD	18. UNIT	UNIT PRICE	20. AMOUNT
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673 Bru	OCG Supply Co.,	1071^,.			Defense ATTIV: Camero Alexan	se Fuel DFAS-CO on Stationdria, V	m 81dg M 2230	j 8 : 24-6160		
9 मा राज्य (100 है है है है	Ø om• men #] COD€		FOB, Fo	4.	-÷Defen Stock Fuels ATTN:	Fund Di Account DFAS-CO bus, OH	nce//co rectori ring and D-SFFP,	cunting ate d Paymo P.O. 1	Service, Column ents Division Box 182317	
Directora Supply Se Fuel Oil	le of Installation	256					300 	,	2700	
ITEM 180.	16. STOCK/PA	פ אטרונות פי איני	Oi ong comment - Iype of aner number.)	ESCROPTI		17. QU从 SH:27R	штү ,	ia. UNT	19. Utat PPICE	AUCUNT
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TOUR COTTING	101 . 0000	<u> </u>		10 ADAWIG	sieneo.ar se Fuel Sug	nlv Cente	r	
T/A CPO 673 Brun	O&G Supply Co., nswick Ave., Box 1 NJ 87065	071Λ,		ATTII: Camero	DFAS-CO/DF on Station ndria, VA	Blog 8	:	
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·		ביי		Stock Fuels ATTN:	Fund Direction Accounting	torate - g and Paym FP, P.O.	ng Service; Col ments Division Box 182317	unitus Center
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T/A CPO 673 Bour	nswick Ave., Box	1071Λ.	<u> </u>		Alexai	on Stat ndria, '	VA 2230	4-6160		
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Directora	te of Installation	on Logistic	CS · · ·	#		Y	جھوج	< 27	00	
Fuel Oil	Branch		*	• •			. (7	•	
	ԾմԱհ, NJ 07703-					**	- 4		. · ·	20.
i. IIEU NO.	18. STOCK/P/	re number of ship	e⊒ D cong containers - (γpe o ntainer πυποκι)	ESCRPTI	.	17. OU/ SH#2/	MULLA PECD	18. UNT	UNIT PRICE	AMOUNT
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ZJ. COHINCIO	ON USE CHLY	7X4930.5CF	0 01 26.1 5331	50 X	XXXXX//\	/RR	;		W15HZ	S 4350-0076
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4 20 Jan 95	1 B/L	1 5 ascc	MET .]3		
Premier OSG Supply Co., T/A CPO 673 Brunswick Ave., Box Ralway, NJ U7065	1071A , .	Defense Fuel Supp ATTH: DFAS-CO/DFS Cameron Station B Alexandria, VA 2	2304-6160	C006	
SHPTSD FROM (I) only than (I) CODE	FOB:	Defense Finance/A Stock Fund Direct Fuels Accounting ATTN: DFAS-CO-SFF Columbus, CH 432	occounting S orate and Payment P, P.O. Box	s Division (182317	itus Center
Directorate of Installation Supply Services Division Fuel Oil Branch Fort Hammauli, NJ 07703=	η Logistics	· Y3945	27 27 C	ф.	I
ITEU 16. STOCK/PA	RT NO. Significant Appendix Container of shipping containers Appendix Container accomment animology.)	NON 17. QUAMMY SHEVRECTO	* UNT	UNIT PRICE	AMOUNT
33 462 Burner 011 //2		7,549	gr	.59	4, 453.91
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5 24 Jan 95 101	H	NET . 30	,
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Premier OlG Supply Co., T/A CPO 673 Brunswick Ave., Box 1071A, Rahway, NJ 197055	Defense Fuel Supp ATIN: DFAS-CO/DF Cameron Station & Alexandria, VA	SC-16-FP 31 dg 8 :	
SHOULD FLOOR & other shart st. CODE EOB'S	12. PAYMENT WILL BE M		
I. S1위원 10 conf.	Stock Fund Direc Fuels Accounting ATTN: DFAS-CO-SF Columbus, CH 43	and Payments Division FP, P.O. Box 182317 218-6252	·- ·
(2)	14, MARKED FOR	ස ද	P=1
Directorate of Installation Logistics Supply Services Division Fuel Oil Branch Fort Exhibitin, NJ 07703-5000	Ba	dy 2700	
ITEM ITEM ITEM ITEM INC. DESCRIPTI INC. DESCRIPTI DESCRIPT	ON 17. QUANTITY SHEP/RECTO	# Urat Urat Proce	AMOUNT
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TICKET NR. GALLONS			
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uniform to contract, except as noted herein or on contract, except as noted documents.	never or on support	1-24-95 DATE RECEIVED SOUT	ME OF MINI COVI (CE)
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AND THE		* If outsilky received by same as outsilky shipped mark, if different enter accessed below outsilky this cerved below outsilky this	tual quantity re-
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Premier OSG Supply Co., T/A CPO 673 Brunswick Ave., Box Rahway, NJ 97055	1071A,	Defense Fue ATTII: DFAS- Cameron Sta Alexandria,	1 Supply CO/DFSC-R tion Blog	8 :		
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Directorate of Installation Supply Services Division Fuel Oil Branch Fort Hammauth, NJ 07703-5	n Logistics	14. MARKED FOR	•	٠٠ مهر <u>ب</u>	700	
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, Rahway	, NO 07055			ľ	•			-
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	•	• •			: DFAS-CO-SFFP ibus, OH 4321		BOX 152317	
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Premier O&G Supply Co., T/A CPO 673 Brunswick Ave., Box 1071A, Rahway, NJ 37065 Defense Fuel Supply Center ATTIL: DFAS-CO/DFSC-RefP Cameron Station Blog 8: Alexandria, VA 22304-6160	COSE
Premier OSG Supply Co., T/A CPO 673 Brunswick Ave., Box 1071A, Rahway, NJ 37065 FOU: 12. PAYMENT WILL BE MADE BY Defense Finance//cocunting Service, Stock Fund Directorate Fuels Accounting and Payments Divisit ATTN: DFAS-CO-SFFP, P.O. Box 182317 Columbus, CH 43218-6252	cost
Defense Finance//cccunting Service, Stock Fund Directorate Fuels Accounting and Payments Division ATTN: DFAS-CO-SFFP, P.O. Box 182317 Columbus, CH 43218-6252 TARRED FOR	
upply Services Division (5984 2700) uel Dil Branch	ion .
OFT POSITION NO. 07703-5000 18. STOCK/PART NO. DESCRIPTION 17. 18. 19. TIEM (Procure number of sticting containers - type of OUNTITY) UNIT PROCURE SHEP/RECO SHEP/RECO	20.
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Attachment 8.6

Building 2700 Natural Gas Bills

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 09/23/95 PAGE 81

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: .GUAM, CT., BLD 2103 FTMON

ACCOUNT NUMBER: 10-3203-0420-1-0 BILL TYPE: MONTHLY

CURRENT READ: CALCULATED NEXT READ DATE: 10/13/95 RATE: COM LLF

544139 CONSTANT: B CURR METER READ: 4650 PREV METER READ: 4489 METER NUMBER:

1.052 = THERMS: 169.37 SERVICE PERIOD: 08/14-09/13 CCF USED: 161 X

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 ADDITIONAL CURRENT CHRGS: \$.00 PRIOR BILL: TOTAL: \$138.38

ACCOUNT NUMBER: 10-3203-0421-1-6

CURRENT READ: CALCULATED NEXT READ DATE: 10/13/95 RATE: COM LLF

565301 CONSTANT: A CURR METER READ: 613 PREV METER READ: METER NUMBER:

38 X 1.047 = THERMS: 39.79 SERVICE PERIOD: 08/14-09/13 \$.00 ADJUSTMENT: \$.00 CCF USED:

SERVICE CHARGE:

\$43.07 PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL:

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: ,RIVERSIDE,AV,,BLD 498 **FTMON**

ACCOUNT NUMBER: 10-3203-0423-1-9 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 10/13/95

METER NUMBER: 260119 CONSTANT: B CURR METER READ: 4231 PREV METER READ: 4225

CCF USED: 6 X 1.052 = THERMS: 6.31 SERVICE PERIOD: 08/14-09/13

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: S.OO TOTAL: \$18.45

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 1220, BUILDING, , , B RITTKO FTMON

ACCOUNT NUMBER: 10-3203-0425-1-1 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 10/13/95

METER NUMBER: 550502 CONSTANT: B CURR METER READ: 32 PREV METER READ:

CCF USED: 1.052 = THERMS: 3.16 SERVICE PERIOD: 08/14-09/13

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$16.14

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 2700, BUILDING,,, B PEARL HFTMON ACCOUNT NUMBER: 10-3203-0426-1-8

BILL TYPE: MONTHLY CURRENT READ: CALCULATED NEXT READ DATE: 10/13/95 RATE: COM LLF

METER NUMBER: 382802 CONSTANT: B CURR METER READ: 7286 PREV METER READ: 7243

CCF USED: 43 X 1.052 = THERMS: 45.24 SERVICE PERIOD: 08/14-09/13

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: 547.09

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 10/25/95 PAGE 81

ACCOUNT NUMBER: 10-3203-0420-1-0
RATE: COM LIE FTMON

BILL TYPE: MONTHLY

CURRENT READ: ACTUAL NEXT READ DATE: 12/14/95 RATE: COM LLF

544139 CONSTANT: B CURR METER READ: 4769 PREV METER READ: 4650 METER NUMBER:

CCF USED: 119 X 1.053 = THERMS: 125.31 SERVICE PERIOD: 09/13-10/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL: \$.00 TOTAL: \$105.97

ACCOUNT NUMBER: 10-3203-0421-1-6
RATE: COM 11 F SERVICE ADDRESS: 145, BUILDING,,, SHERRILL FTMON

BILL TYPE: PRORATE

-3203-0421-1-6 BILL TO CURRENT READ: ACTUAL NEXT READ DATE: 12/14/95

565301 CONSTANT: A CURR METER READ: 584 PREV METER READ: 575 METER NUMBER:

9 X 1.048 = THERMS: 9.43 SERVICE PERIOD: 08/14-10/13 \$.00 ADJUSTMENT: \$43.07-CCF USED:

SERVICE CHARGE: \$.00 ADDITIONAL CURRENT CHRGS: S.OO TOTAL: PRIOR BILL:

CUSTOMER NAME: FORT MONMOUTH ACCOUNT NUMBER: 10-3203-0423-1-9 SERVICE ADDRESS: ,RIVERSIDE,AV,,BLD 498

BILL TYPE: MONTHLY

10-3203-0423-1-9 BILL TO CURRENT READ: ACTUAL NEXT READ DATE: 12/14/95 RATE: COM LLF

METER NUMBER: 260119 CONSTANT: B CURR METER READ: 4238 PREV METER READ: 4231

CCF USED: 7 X 1.053 = THERMS: 7.37 SERVICE PERIOD: 09/13-10/13

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: S.OO TOTAL: \$19.23

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 1220,BUILDING,,,B RITTKO FTMON ACCOUNT NUMBER: 10-3203-0425-1-1 BILL TYPE: MONTHLY RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 12/14/95

METER NUMBER: 550502 CONSTANT: B CURR METER READ: 38 PREV METER READ:

CCF USED: 6 X 1.053 = THERMS: 6.32 SERVICE PERIOD: 09/13-10/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$18.46

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 2700, BUILDING,,, B PEARL HFTMON ACCOUNT NUMBER: 10-3203-0426-1-8 BILL TYPE: MONTHLY RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 12/14/95

METER NUMBER: 382802 CONSTANT: B CURR METER READ: 8125 PREV METER READ: 7286

CCF USED: 839 X 1.053 = THERMS: 883.47 SERVICE PERIOD: 09/13-10/13

SERVICE CHARGE: \$.00 ABJUSTMENT: \$.00

\$.00 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL: TOTAL: \$663.60

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 11/23/95 PAGE 81

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: ,GUAM, CT., BLD 2103 FTMON BILL TYPE: MONTHLY ACCOUNT NUMBER: 10-3203-0420-1-0

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 12/14/95

544139 CONSTANT: B CURR METER READ: 5119 PREV METER READ: 4769 METER NUMBER:

CCF USED: 350 X 1.052 = THERMS: 368.20 SERVICE PERIOD: 10/13-11/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$284.62 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

ACCOUNT NUMBER: 10-3203-0421-1-6

RATE: COM LE

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 12/14/95

METER NUMBER: 565301 CONSTANT: A CURR METER READ: 709 PREV METER READ:

CCF USED: 125 X 1.047 = THERMS: 130.88 SERVICE PERIOD: 10/13-11/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$110.07 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

ACCOUNT NUMBER: 10-3203-0423-1-9
RATE: COM LLE FTMON

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 12/14/95
METER NUMBER: 260119 CONSTANT: B CURR METER READ: 4267 PREV METER READ: 4238

CCF USED: 29 X 1.052 = THERMS: 30.51 SERVICE PERIOD: 10/13-11/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

SERVICE CHARGE:

\$.00 TOTAL: \$36.25 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 1220, BUILDING, ,, B RITTKO FTMON ACCOUNT NUMBER: 10-3203-0425-1-1 BILL TYPE: MONTHLY

CURRENT READ: CALCULATED NEXT READ DATE: 12/14/95 RATE: COM LLF

550502 CONSTANT: B CURR METER READ: 44 PREV METER READ: METER NUMBER:

CCF USED: 6 X 1.052 = THERMS: 6.31 SERVICE PERIOD: 10/13-11/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

SERVICE CHARGE:

\$.00 TOTAL: \$18.45 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 2700, BUILDING,,, B PEARL HFTMON ACCOUNT NUMBER: 10-3203-0426-1-8 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 12/14/95

METER NUMBER: 382802 CONSTANT: B CURR METER READ: 8822 PREV METER READ: 8125

CCF USED: 697 X 1.052 = THERMS: 733.24 SERVICE PERIOD: 10/13-11/13 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

SERVICE CHARGE:

\$.00 TOTAL: \$553.11 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 12/28/95 PAGE 81

SERVICE ADDRESS: 145.BUILDING.,,SHERRILL FTMON

ACCOUNT NUMBER: 10-3203-0421-1-6
RATE: COM LLF BILL TYPE: MONTHLY

ACCOUNT NUMBER: 10-3203-0421-1-6
RATE: COM LLF CURRENT READ: ACTUAL
NEXT READ DATE: 02/14/96

METER NUMBER: 565301 CONSTANT: A CURR METER READ: 795 PREV METER READ:

CCF USED: 86 X 1.047 = THERMS: 90.04 SERVICE PERIOD: 11/13-12/14 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$80.04 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: ,RIVERSIDE,AV,,BLD 498 FTMON ACCOUNT NUMBER: 10-3203-0423-1-9 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 02/14/96

260119 CONSTANT: B CURR METER READ: 4311 PREV METER READ: 4267 METER NUMBER:

CCF USED: 44 X 1.052 = THERMS: 46.29 SERVICE PERIOD: 11/13-12/14

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$47.85 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

ACCOUNT NUMBER: 10-3203-0425-1-1
RATE: COM 11F

10-3203-0425-1-1 BILL T'
CURRENT READ: CALCULATED NEXT READ DATE: 02/14/96 RATE: COM LLF

METER NUMBER: 550502 CONSTANT: B CURR METER READ: 54 PREV METER READ: 44 CCF USED: 10 X 1.052 = THERMS: 10.52 SERVICE PERIOD: 11/13-12/14 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$21.54 PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS:

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 2700, BUILDING,,,B PEARL HFTMON ACCOUNT NUMBER: 10-3203-0426-1-8 BILL TYPE: MONTHLY RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 02/14/96

METER NUMBER: 382802 CONSTANT: B CURR METER READ: 9042 PREV METER READ: 8822

CCF USED: 220 X 1.052 = THERMS: 231.44 SERVICE PERIOD: 11/13-12/14

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$184.04

CUSTOMER NAME: FORT MONMOUTH SERVICE ADDRESS: 1124, BUILDING,,, ALEXANDERFTMON ACCOUNT NUMBER: 10-3203-0427-1-4 BILL TYPE: MONTHLY

CURRENT READ: ACTUAL NEXT READ DATE: 02/14/96 RATE: COM LLF

566086 CONSTANT: B CURR METER READ: 1035 PREV METER READ: 950

METER NUMBER: 566086 CONSTANT: B CURR METER READ: 1035 FREY INCIDENCE COF USED: 85 X 1.052 = THERMS: 89.42 SERVICE PERIOD: 11/13-12/14 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00 S.00 TOTAL: \$.00 TOTAL: \$79.58



Billing or Service Telephone Numbers-

WITHIN NEW JERSEY

1-800-221-0051

FROM OUT OF STATE

1-908-938-7977

ACCOUNT NUMBER 20-3298-4510-18	FORT MONMOUTH	_	,040.86
20 3230 4310 10	DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLDG 173		15, 1994
	ATT: MRS WHITE FT MONMOUTH, NJ 07703	SHOWS PAYME	O3, 1994

BALANCE FORWARD:

\$132,971.86

LGA AMOUNT:

\$11,833.30

115,001.27

PRIOR BILLS:

\$.00

WNA AMOUNT:

\$.72

PAYMENT - THANK YOU

\$31,474.01-07/20 \$101,497.85-

THERMS:

ADJUSTMENTS: SERVICE CHARGES: CURRENT CHARGES: \$4,083.74-\$195.00

\$86,929.60

TOTAL AMOUNT DUE:

\$83,040.86

IMPORTANT INFORMATION ON REVERSE SIDE

Please return this portion with your payment
When paying in person, please bring this entire notice with you
Make checks payable to NJNG

ACCOUNT NUMBER

20-3298-4510-18

DUE DATE

AUGUST 15, 1994

AMOUNT DUE

\$83,040.86

FORT MONMOUTH
DIRECTOR OF PUBLIC WORKS
SELFM-PW-R BLDG 173
ATT: MRS WHITE
FI MONMOUTH, NJ 07703-0000

NJ NATURAL GAS CO. P.O.BOX 1378 WALL, N.J. 07715-0001

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 08/04/94 PAGE 60

SERVICE ADDRESS: 1220, BUILDING, , , B RITTKO FTMON ACCOUNT NUMBER: 10-3203-0425-1-1 CURRENT AMOUNT: \$63.44 BILL TYPE: PRORATE RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 08/16/94 550502B CURRENT METER READ: METER NUMBER: 14 PREVIOUS METER READ: CCF USED: 14 X 1.060 = THERMS: 14.84 SERVICE PERIOD: 03/22-07/16 SERVICE CHARGE: \$.00 ADJUSTMENT: \$202.60-PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: S.OO TOTAL: \$139.16-SERVICE ADDRESS: 2700, BUILDING, , , B GUAM FTMON ACCOUNT NUMBER: 10-3203-0426-1-8 CURRENT AMOUNT: \$.00 BILL TYPE: UNBILLED RATE: COM LLF CURRENT READ: NO READ NEXT READ DATE: 08/16/94 METER NUMBER: 382802B CURRENT METER READ: PREVIOUS METER READ: CCF USED: 0 X 1.060 = THERMS: .00 SERVICE PERIOD: 06/24-00/00 SERVICE CHARGE: \$15.00 ADJUSTMENT: \$.00 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL: \$.00 TOTAL: \$15.00 SERVICE ADDRESS: ,PINE BROOK, RD, , BLDG 45 ETNTN ACCOUNT NUMBER: 10-3249-8155-1-6 CURRENT AMOUNT: \$18,195.11 BILL TYPE: PRORATE RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 08/18/94 CURRENT METER READ: 12127 METER NUMBER: 500710 PREVIOUS METER READ: 12063 248860 73512 73026 508988 7114 7058 522758 70650 70425 522760 719320 718830 CCF USED: 24010 X 1.055 = THERMS: SERVICE PERIOD: 05/20-07/21 25330.55 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00 PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$18,195.11 SERVICE ADDRESS: 116, MARCONI, RD,, CAMP EVANWALL ACCOUNT NUMBER: 11-3347-5310-1-5 CURRENT AMOUNT: \$1,059.24 BILL TYPE: MONTHLY RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 08/22/94 METER NUMBER: 252269 CURRENT METER READ: 59955 PREVIOUS METER READ: 59821 CCF USED: 1340 X 1.055 = THERMS: 1413.70 SERVICE PERIOD: 06/23-07/25 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00 PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$1,059.24 SERVICE ADDRESS: ,OCEANPORT, AV,, AREA 10 OCNPT ACCOUNT NUMBER: 13-3254-7500-1-6 CURRENT AMOUNT: \$4.14 BILL TYPE: FINAL CURRENT READ: ACTUAL RATE: COM HLF NEXT READ DATE: 08/15/94

56179

\$.00

.00

PREVIOUS METER READ: 108555

TOTAL:

SERVICE PERIOD: 06/16-06/24

\$.00

56179

54.14

528490 CURRENT METER READ: 108555

\$.00 ADDITIONAL CURRENT CHRGS:

ADJUSTMENT:

1.055 = THERMS:

\$.00

METER NUMBER:

SERVICE CHARGE:

CCF USED:

PRIOR BILL:

336220

0 X

NEW JERSEY NATURAL GAS COMPANY

People and Resources Dedicated to Service

1415 WYCKOFF ROAD, P.O. BOX 1378 WALL, NEW JERSEY 07715-0001

Billing or Service Telephone Numbers-

WITHIN NEW JERSEY FROM OUT OF STATE

LGA AMOUNT:

WNA AMOUNT:

THERMS:

1-800-221-0051 1-908-938-7977

\$8,177.98

79,474.93

\$.16

ACCOUNT NUMBER

20-3298-4510-18

FORT MONMOUTH

DIRECTOR OF PUBLIC WORKS

SELFM-PW-R BLDG 173

ATT: MRS WHITE

FT MONMOUTH, NJ 07703

STOTAL BALANCE

\$59,372.90

DUE DATE

SEPTEMBER 06, 1994

ATT: MRS WHITE

FT MONMOUTH, NJ 07703

AUGUST 24, 1994

LANCE FORWARD: \$83,040.86
IOR BILLS: \$.00
YMENT - THANK YOU 08/23 \$83,040.86JUSTMENTS: \$4,602.87RVICE CHARGES: \$495.00
RRENT CHARGES: \$63,480.77
TAL AMOUNT DUE: \$59,372.90

IMPORTANT INFORMATION ON REVERSE SIDE

ease return this portion with your payment. When paying in person, ease bring this entire bill with you. Make checks payable to NJNG. r address changes or comments, please call numbers shown above.

ACCOUNT NUMBER
20-3298-4510-18
DUE DATE
SEPTEMBER 06, 1994
AMOUNT DUE
\$59,372.90

FORT MONMOUTH
DIRECTOR OF PUBLIC WORKS
SELFM-PW-R BLDG 173
ATT: MRS WHITE
FT MONMOUTH, NJ 07703-0000

NJ NATURAL GAS CO. P.O.BOX 1378 WALL, N.J. 07715-0001 0022 02/24/94

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-13 DATE 08/25/94 PAGE 66

SERVICE ADDRESS: 2103,BUILDING,,,GUAM RD FTMON
ACCOUNT NUMBER: 10-3203-0420-1-0 CURRENT AMOUNT: \$232.83 BILL TYPE: MONTHLY
RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 1C/17/94
METER NUMBER: 544139B CURRENT METER READ: 652 PREVIOUS METER READ: 371
CCF USED: 281 X 1.054 = THERMS: 296.17 SERVICE PER:00: 07/19-08/16
SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00
PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$232.83

SERVICE ADDRESS: 498.BUILDING.,,RIVERSIDE FTMON

ACCOUNT NUMBER: 10-3203-0423-1-9 CURRENT AMOUNT: \$19.27 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

METER NUMBER: 260119B CURRENT METER READ: 3961 PREVIOUS METER READ: 3954

CCF USED: 7 X 1.054 = THERMS: 7.38 SERVICE PERIOD: 07/16-08/16

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$19.27

SERVICE ADDRESS: 1220,BUILDING,,,B RITTKO FTMON

ACCOUNT NUMBER: 10-3203-0425-1-1 CURRENT AMOUNT: \$16.93 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

METER NUMBER: 550502B CURRENT METER READ: 18 PREVIOUS METER READ: 14

CCF USED: 4 X 1.054 = THERMS: 4.22 SERVICE PERIOD: 07/16-08/16

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$16.93

SERVICE ADDRESS: 2700, BUILDING,,,B GUAM FTMON
ACCOUNT NUMBER: 10-3203-0426-1-8 CURRENT AMOUNT: \$76.47 BILL TYPE: PRORATE
RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 10/17/94
METER NUMBER: 382802B CURRENT METER READ: 5838 PREVIOUS METER READ: 5770
CCF USED: 68 X 1.054 = THERMS: 71.67 SERVICE PERIOD: 06/24-08/16
SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00
PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$76.47

W JERSEY NATURAL GAS COMPANY

people and Resources Dedicated to Service

TOTAL AMOUNT DUE:

1415 WYCKOFF ROAD, P.O. BOX 1378 WALL, NEW JERSEY 07715-0001

Billing or Service Telephone Numbers-

WITHIN NEW JERSEY

LGA AMOUNT:

WNA AMOUNT:

THERMS:

1-800-221-0051

FROM OUT OF STATE

1-908-938-7977

\$7,935.10

77,115.40

\$17.82

ACCOUNT NUMBER 20-3298-4510-18	FORT MONMOUTH	TOTAL BALANCE \$55.554.98
	DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLDG 173	OCTOBER 05, 1994
	ATT: MRS WHITE FT MONMOUTH, NJ 07703	SHOWS PAYMENTS RECEIVED BY SEPTEMBER 23, 1994

BALANCE FORWARD: \$59,372.90 PRIOR BILLS: \$.00 PAYMENT - THANK YOU 09/13 \$59,372.90-ADJUSTMENTS: \$6,012.46~ SERVICE CHARGES: \$255.00 CURRENT CHARGES: \$61,312.44

\$55,554.98

IMPORTANT INFORMATION ON REVERSE SIDE

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ACCOUNT NUMBER 20-3298-45<u>10-18</u> DUE DATE <u>OCTOBER</u> 05, 1994 AMOUNT DUE \$55,554.98

FORT MONMOUTH DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLDG 173 ATT: MRS WHITE FT MONMOUTH, NJ 07703-0000 NJ NATURAL GAS CO. P.O.BOX 1378 WALL, N.J. 07715-0001

PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 09/26/94 PAGE 70

SERVICE ADDRESS: 2700, BUILDING... B PEARL HFTMON BILL TYPE: UNBILLED \$ 00 ACCOUNT NUMBER: 10-3203-0426-1-8 CURRENT AMOUNT: NEXT READ DATE: 10/17/94 CURRENT READ: NO READ RATE: COM LLF 5770 PREVIOUS METER READ: 382802B CURRENT METER READ: METER NUMBER: SERVICE PERIOD: 09/01-00/00 1.054 = THERMS: .00 0 X CCF USED: \$76.47-ADJUSTMENT: \$15.00 SERVICE CHARGE: \$.00 TOTAL: \$61.47-ADDITIONAL CURRENT CHRGS: \$.00 PRIOR BILL: SERVICE ADDRESS: ,PINE BROOK, RD, ,BLDG 45 ETNTN \$9,211.14 BILL TYPE: PRORATE ACCOUNT NUMBER: 10-3249-8155-1-6 CURRENT AMOUNT: NEXT READ DATE: 10/19/94 CURRENT READ: ACTUAL RATE: COM LLF 12127 12129 PREVIOUS METER READ: 500710 CURRENT METER READ: METER NUMBER: 73512 73967 248860 7114 7146 508988 70650 70774 522758 719320 719610 522760 12682.41 SERVICE PERIOD: 07/21-09/19 1.049 = THERMS: 12090 X CCF USED: ADJUSTMENT: \$.00 \$.00 SERVICE CHARGE: \$.00 TOTAL: \$9,211.14 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL: SERVICE ADDRESS: 116, MARCONI, RD,, CAMP EVANWALL PRORATE

\$2.075.56 BILL TYPE: ACCOUNT NUMBER: 11-3347-5310-1-5 CURRENT AMOUNT: NEXT READ DATE: 10/21/94 CURRENT READ: ACTUAL RATE: COM LLF 252269 CURRENT METER READ: 60219 PREVIOUS METER READ: 59955 METER NUMBER: 1.049 = THERMS: 2769.36 SERVICE PERIOD: 07/25-09/21 2640 X CCF USED: \$.00 \$.00 : ADJUSTMENT SERVICE CHARGE: \$.00 TOTAL: \$2,075.56 \$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL:

SERVICE ADDRESS: ,OCEANPORT, AV,, AREA 1C OCNPT \$.00 BILL TYPE: FINAL ACCOUNT NUMBER: 13-3254-7500-1-6 CURRENT AMOUNT: CURRENT READ: ACTUAL NEXT READ DATE: 08/15/94 RATE: COM HLF PREVIOUS METER READ: 108555 CURRENT METER READ: 108555 METER NUMBER: 528490 56179 336220 SERVICE PERIOD: 06/16-06/24 1.055 = THERMS: MTT3 .00 CCF USED: 0 X \$.00 ADJUSTMENT: \$.00 SERVICE CHARGE:

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$.00

SEY NATURAL GAS COMPANY Resources Dedicated to Service 15 WYCKOFF ROAD, P.O. BOX 1378 WALL, NEW JERSEY 07715-0001

Billing or Service Telephone Numbers-

WITHIN NEW JERSEY 1-800-221-0051

FROM OUT OF STATE 1-908-938-7977

ACCOUNT NUMBER TOTAL BALANCE 20-3298-4510-18 \$97,444.28 FORT MONMOUTH DIRECTOR OF PUBLIC WORKS DUE DATE SELFM-PW-R BLDG 173 NOVEMBER 04, 1994 ATT: MRS WHITE SHOWS PAYMENTS RECEIVED BY FT MONMOUTH. NJ 07703 OCTOBER 25. 1994

LANCE FORWARD: \$55.554.98 LGA AMOUNT: \$13,167.59 WNA AMOUNT: IOR BILLS: \$.00 \$.02 YMENT - THANK YOU 10/07 \$55.554.98-JUSTMENTS: \$3,017.41-THERMS: 127,964.96 RVICE CHARGES: RRENT CHARGES: \$690.00 \$99,771.69

\$97,444.28

IMPORTANT INFORMATION ON REVERSE SIDE

TAL AMOUNT DUE:

ise return this portion with your payment. When paying in person, ise bring this entire bill with you. Make checks payable to NJNG. address changes or comments, please call numbers shown above.

ACCOUNT NUMBER 20-3298-4510-18 DUE DATE NOVEMBER 04, 1994 AMOUNT DUE \$97,444.28

FORT MONMOUTH DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLDG 173 ATT: MRS WHITE FT MONMOUTH, NJ 07703-0000 NJ NATURAL GAS CO. P.O.BOX 1378 WALL, N.J. 07715-0001

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 10/26/94 PAGE 79

SERVICE ADDRESS: 1220, BUILDING, , , B RITTKO FTMON

ACCOUNT NUMBER: 10-3203-0425-1-1 CURRENT AMOUNT: \$33.08 BILL TYPE: PRORATE

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 12/16/94

METER NUMBER: 550502B CURRENT METER READ: 25 PREVIOUS METER READ: 18 CCF USED: 7 X 1.054 = THERMS: 7.38 SERVICE PERIOD: 08/16-10/17

SERVICE CHARGE: \$.00 ADJUSTMENT: \$43.43-

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$10.35-

SERVICE ADDRESS: 2700, BUILDING,,, B PEARL HFTMON

ACCOUNT NUMBER: 10-3203-0426-1-8 CURRENT AMOUNT: \$109.57 BILL TYPE: PRORATE

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 12/16/94

METER NUMBER: 382802B CURRENT METER READ: 5884 PREVIOUS METER READ: 5770

CCF USED: 114 X 1.054 = THERMS: 120.16 SERVICE PERIOD: 09/01-10/17

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$109.57

SERVICE ADDRESS: ,PINE BROOK, RD., BLDG 45 ETNTN

ACCOUNT NUMBER: 10-3249-8155-1-6 CURRENT AMOUNT: \$.00 BILL TYPE: UNBILLED

RATE: COM LLF CURRENT READ: NO READ NEXT READ DATE: 11/17/94

METER NUMBER: 500710 CURRENT METER READ: PREVIOUS METER READ: 12129
248860 73967

508988 7146

522758 70774

CCF USED: 0 X 1.050 = THERMS: .00 SERVICE PERIOD: 09/19-00/00

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$.00

SERVICE ADDRESS: 116, MARCONI, RD., CAMP EVANWALL

ACCOUNT NUMBER: 11-3347-5310-1-5 CURRENT AMOUNT: \$1,388.17 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 11/17/94

METER NUMBER: 252269 CURRENT METER READ: 60396 PREVIOUS METER READ: 60219

CCF USED: 1770 X 1.050 = THERMS: 1858.50 SERVICE PERIOD: 09/21-10/19

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$1,388.17

SERVICE ADDRESS: ,OCEANPORT, AV, , AREA 1C OCNPT

ACCOUNT NUMBER: 13-3254-7500-1-6 CURRENT AMOUNT: \$.00 BILL TYPE: FINAL

RATE: COM HLF CURRENT READ: ACTUAL NEXT READ DATE: 08/15/94

METER NUMBER: 528490 CURRENT METER READ: 108555 PREVIOUS METER READ: 108555

336220 56179 56179

CCF USED: 0 X 1.055 = THERMS: .00 SERVICE PERIOD: 06/16-06/24

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00
PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$.00



Billing or Service Telephone Numbers-

WITHIN NEW JERSEY 1-800-221-0051

THERMS:

FROM OUT OF STATE 1-908-938-7977

TOTAL BALANCE ACCOUNT NUMBER FORT MONMOUTH \$59,372.90 20-3298-4510-18 DIRECTOR OF PUBLIC WORKS DUE DATE SEPTEMBER 06, 1994 SELFM-PW-R BLDG 173 SHOWS PAYMENTS RECEIVED BY ATT: MRS WHITE AUGUST 24, 1994 FT MONMOUTH, NJ 07703

BALANCE FORWARD: \$8,177.98 LGA AMOUNT: \$83.040.86 PRIOR BILLS: WNA AMOUNT: \$.16 \$.00 PAYMENT - THANK YOU 08/23 \$83,040.86-79,474.93

ADJUSTMENTS: \$4,602.87-SERVICE CHARGES: \$495.00 CURRENT CHARGES: \$63,480.77

TOTAL AMOUNT DUE: \$59,372.90

IMPORTANT INFORMATION ON REVERSE SIDE

lease return this portion with your payment. When paying in person, ilease bring this entire bill with you. Make checks payable to NUNG. for address changes or comments, please call numbers shown above.

ACCOUNT NUMBER 20-3298-<u>4510-</u>18 DUE DATE 1994 SEPTEMBER 06, AMOUNT DUE \$59,372.90

FORT MONMOUTH DIRECTOR OF PUBLIC WORKS SELFM-PW-R BLDG 173 ATT: MRS WHITE FT MONMOUTH, NJ 07703-0000 NJ NATURAL GAS CO. P.O.BOX 1378 WALL, N.J. 07715-0001

NEW JERSEY NATURAL GAS COMPANY SUMMARY BILLING PRIMARY ACCOUNT NUMBER 20-3298-4510-18 DATE 08/25/94 PAGE 66

SERVICE ADDRESS: 2103, BUILDING, , , GUAM RD FTMON

ACCOUNT NUMBER: 10-3203-0420-1-0 CURRENT AMOUNT: \$232.83 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

METER NUMBER: 544139B CURRENT METER READ: 652 PREVIOUS METER READ:

CCF USED: 281 X 1.054 = THERMS: 296.17 SERVICE PERIOD: 07/19-08/16 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$232.83

SERVICE ADDRESS: 621, BUILDING, , , HARMON AV FTMON

ACCOUNT NUMBER: 10-3203-0422-1-2 CURRENT AMOUNT: \$53.12 BILL TYPE: PRORATE

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

275795B CURRENT METER READ: 267 PREVIOUS METER READ: METER NUMBER:

CCF USED: 15 X 1.054 = THERMS: 15.81 SERVICE PERIOD: 05/18-08/16 SERVICE CHARGE: \$.00 ADJUSTMENT: \$95.75-SERVICE CHARGE:

\$.00 ADDITIONAL CURRENT CHRGS: PRIOR BILL: \$.00 TOTAL: \$42.63-

SERVICE ADDRESS: 498.BUILDING, , . RIVERSIDE FTMON

ACCOUNT NUMBER: 10-3203-0423-1-9 CURRENT AMOUNT: \$19.27 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

METER NUMBER: 260119B CURRENT METER READ: 3961 PREVIOUS METER READ: 3954

CCF USED: 7 X 1.054 = THERMS: 7.38 SERVICE PERIOD: 07/16-08/16

SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: - \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$19.27

SERVICE ADDRESS: 1220, BUILDING, , , B RITTKO FTMON

ACCOUNT NUMBER: 10-3203-0425-1-1 CURRENT AMOUNT: \$16.93 BILL TYPE: MONTHLY

RATE: COM LLF CURRENT READ: ACTUAL NEXT READ DATE: 10/17/94

METER NUMBER: 550502B CURRENT METER READ: 18 PREVIOUS METER READ: 14 4 X 1.054 = THERMS: 4.22 SERVICE PERIOD: 07/16-08/16 CCF USED:

SERVICE CHARGE: \$.00 ADJUSTMENT:
PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 ADJUSTMENT: \$.00

\$.00 TOTAL: \$16.93

SERVICE ADDRESS: 2700, BUILDING, ., B GUAM FTMON

ACCOUNT NUMBER: 10-3203-0426-1-8 CURRENT AMOUNT: \$76.47 BILL TYPE: PRORATE

RATE: COM LLF CURRENT READ: CALCULATED NEXT READ DATE: 10/17/94
METER NUMBER: 382802B CURRENT METER READ: 5838 PREVIOUS METER READ: 5770

CCF USED: 68 X 1.054 = THERMS: 71.67 SERVICE PERIOD: 06/24-08/16 SERVICE CHARGE: \$.00 ADJUSTMENT: \$.00

PRIOR BILL: \$.00 ADDITIONAL CURRENT CHRGS: \$.00 TOTAL: \$76.47

GENERAL INFORMATION

OFFICE LOCATIONS HOURS-8am to 4.30pm

ROCKAWAY 201 Pourich# Drive ASBURY PARK 601 Bancs Ave WALL 1415 Wyckoff Rc LAKEWCOD 775 Vassar Ave

TELEPHONE NUMBERS

: HOD NUMBERS ARE TOLL FREE Subject to Service Observation HOURS-See Below

Customer Inquiry	
UN MIHTIW	1-800-221-0051
OUTSIDE NJ	1-908-938-7977
FOR THE DEAF	1-800-223-0024
GAS LEAKS	1-800-392-6865

TELEPHONE HOURS

Customers may call our Customer Inquiry Center Monday through Friday 7:30am to 6pm

FOR EMERGENCY SERVICE OUR PHONES ARE ANSWERED 24 HOURS A DAY.

SPECIAL SERVICES

NJNG offers special notification services to residential customers with overdue gas bills.

TELEPHONE NOTIFICATION

NJNG will telephone any customer over 65 years of age.; at their request, before acting on an overdue bill.

THIRD PARTY NOTIFICATION

Customers may designate an individual or agency (the third party) to receive a duplicate copy of their delinquent, notice. The "third party" would act only to remind the customers of the overdue balance to avoid an interruption? of service and is under no obligation to pay the bill.

ENERGY CONSERVATION

NJNG offers energy conservation programs to help customers; related to the quantity of gas used. reduce their das usage. For more information, contact our Conservation Center at our Customer Inquiry Numbers noted

CHARGES YOU SHOULD NOTE

To help cover the cost of collecting delinquent bills NJNG charges for:

RETURNED CHECK-\$10

For each check returned by the bank due to lack of funds. there will be a charge of \$10 added to the customer account.

FIELD COLLECTION-\$15

If a field collection visit is required on an overdue bill. there may be a charge of \$15 added to the customer account.

LATE PAYMENT

Commercial and Industrial customers who allow their bill to go unpaid at the time the next monthly bill is prepared are charged an extra 1.5 percent on the overdue balance.

EXPLANATIONS

The following descriptions refer to the other side of this bill.

BILL CALCULATION

This shows the rates and method used to calculate the gas charge portion of your bill

BUDGET BILLING SUMMARY

This information is shown each month on the bills of customers using the Equal Payment Plan. Information includes the starting month, starting balance, all charges and payments, and the running balance which includes the current bill's gas charges.

BTU (British Thermal Unit) CONTENT

This is the heat "value" of the gas you used. The volume of gas used (CCF) is multiplied by the heat value and pressure value, where applicable, to determine the number of billing units (therms) used.

BUDGET OPTION

Customers can automatically join the Equal Payment Plan by paying the "Budget Option" amount shown.

CALCULATED BILL

When meters are not read. NJNG calculates gas use based on the history of your account. At the next actual meter reading, the account automatically adjusts for any difference between the calculated and actual use. Meters are read bimonthly to reduce operating costs borne by our customers.

CUSTOMER CHARGE

This cost covers a portion of the company's sout to serio customers for such items as mailing, taxes, system maintenance and record keeping. The fixed amount is not

DC (Demand Charge)

The demand charge for cogeneration customers.

LGA (Levelized Gas Adjustment)

The LGA reflects costs NJNG pays for natural gas and passes through to customers. NJNG makes no profit on this charge.

RA (Remediation Adjustment)

The RA is an approved rate adjustment relating to environmental corrections of coal-gas manufacturing sites.

THERMS

A therm is a technical name for billing units. Each therm is equivalent to 100,000 BTU

USE COMPARISONS

This information is provided for a comparison of current billing data with the same period last year.

BILLING DAYS - number of days in the billing period CCF BILLED - volume of gas used.

CCF PER DAY - volume used per day.

DEGREE DAYS - the method used to measure cold weather; the colder the weather, the higher number of degree days.

WNA (Weather Normalization Adjustment)

The WNA is an approved rate adjustment based upon variances from normal weather.

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Utility	00	Nov	Dec	Jan	189	Mar	A CA	VaV.	-	1	T WIN	5	L XXX
Electric (MWH)	23,860	5,402	6,132	00	00	00	00	0 0	00	000	0	0	18,525
GAS (THERMS)	104,933	322,181	505,511	885,039	0	6	00	00	00	5	0	0	1.817.684
OAS (MBTU's)	10,493	32,218	50,551	88,504	0	0	0	0	0	0	0	0	181.766
P2 FUEL (GALS	29,980	56,667	60,707	0	-	0	0	0	0	0	0	0	147,354
VELCHBTU	4,158	7,859	8,419	o	o	0	0	0	0	0	0	0	20,436
PROPANE (GA	1,092	2,338	655	655	655	655	655	655	655	655	655	655	999
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TOTAL												, F	YEARLY MBTU'S
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ELECTRIC													FIFCTBIC
MONTHLY KWH 6,891,000	6,891,000	5,402,000	6,132,000	0	0	0	0	o	•	٥	0	0	18,525,000
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COSI \$7 BIOA	0./83	4957.0	0.7255	0.7226	#DIA/oi	#O/A/0#	#DIV/O	IO/AIQ#	#DM/O	#DIA/OI	MDIV/O	#DIV/0J	\$0.684
NO 2 FUEL OIL	FY 96	FY 85	FY 94										
	0.78	0.59	0.71										

Multiply by 3.412948 0.100000 0.13688 0.149685
To MBTUs MBTUs MBTUs MBTUs MBTUS
Conversion Factors ELEC MANH NAT GAS THE PAUS #2 GALS #8 GALS PROP ANE GALS

GENERAL SERVICES ADMINISTRATION FAX THANSMITTAL OPTIONAL FORM 99 (7-90) NSN 7540-01-317-7368 Dept/Agency

For Manmouth, NJ UTILITY COSTS

	П	5.556 5.339 5.786 5.339	481,940 158,841 318,342 318,342	645,000 641,000 526,100	75.55 850 858 858 858 858 858	\$287,924 \$814,237 856,830 897,847 842,817	\$129,473 \$441,821 \$639,308 \$44,632 \$55,440	-65.69% -7.331,115	,403 ,518 ,476 ,681 ,278
	Total	\$2,157,487 \$7,254,566 \$7,256,992 6,945,339 6,945,339 6,507,954	3	\$ \$ \$ \$ \$ \$ \$ \$	\$1,243,519 \$2,540,784 \$1,780,680 1,558,658 \$90,770,770	\$287 \$91.4 \$95.6 \$95.6 \$95.6 \$95.6	85128 8513411 85135 8515	3 2 E.	67,828,403 \$11,159,518 10,533,860 10,048,691 9,159,681 9,532,278
	g _S	580,872 646,309 523,189 671,064	46730 19.580 32.728	167, 374 183,700 137,700 135,700	82,170 83,638 83,638 83,638 83,638	112,708 75,226 66, 128 74,399	33,120 51,438 46,536 51,709	-100.00%	908,870 857,612 725,885 818,422 795,721
	Alug	771,607 731,168 766,425 746,425	67638 22,527 31,776		73,986 55,555 40,330 22,034	91,260 72,477 95,507 81,117	32,790 54,990 47,078 39,418	-100.00%	969,623 914,190 943,782 892,373
	133	827,645 827,645 805,532 716,315	677.45 44.850 34.843		66,565 59,373 80,442 17,539 23,808	83,024 79,281 103,389 90,304	32,690 48,702 48,603 43,138	-100.00%	0 1,009,924 1,014,981 1,038,268 867,296 820,472
OUTH Sosts	un,	685,427 707,003 690,092 600,092 604,940	131334 31,904 28,478 35,907	150,700 175,400 142,600 135,900	74,820 83,041 83,513 43,643	141,102 94,516 103,811 90,366 83,738	32,270 49,456 48,376 43,528 55,147	-100.00%	933,619 934,016 925,782 786,253
FORT MONMOUTH UTLIY COSTS	Mry	506,749 521,633 572,616 539,173 560,731	21.954 18,869 25,271		114,575 101,488 76,895 66,128	53,340 94,115 79,905 71,023	32.290 51,758 56,098 47,466 69,208	-100.00%	0 738,954 789,504 787,514 723,784
. -	Ϋ́	538,024 565,108 523,339 558,579 514,006	84630 22,458 22,249		175,520 66,828 164,337 121,951 70,913	51,369 71,907 68,510 64,618	30,833 56,268 80,877 69,436	-100.00%	0 795,746 756,212 836,923 770,122 728,689
	A	513,954 494,101 530,326 487,929 458,527	226 27,289 25,297 23,026 21,550	164,100 174,000 135,400 134,800	260,838 248,884 344,027 142,890	56.853 71,156 62,120 61,898 62,745	34,993 60,609 75,434 49,479 72,375	-100.00% -866,698	0 866.698 875,729 1,011,907 742,186 705,361
	Teb	531,558 592,547 533,310 430,365 461,060	226 27.884 23.642 24.749 24.176		388,098 225,914 210,691 165,186	53,638 58,387 65,626 66,069 58,287	33.229 55.229 51,282 63,143	-100.00%	0 1,006,523 832,077 850,909 705,917
nouth, NJ UTILITY COSTS	Jan	522,346 534,311 512,086 486,498 481,839 451,467	28.511 28.511 23.631 26.748 25.741		639,535 398,336 462,257 180,818 148,738	58,014 58,101 54,240 56,79	551 32,050 34,571 62,151 51,808 43,724 72,421	20.67%	1,253,845 1,039,086 1,094,595 773,364 719,426 678,578
Fot Mormouth, NJ UTILITY (380	522,652 558,663 531,906 500,629 518,273 457,378	28 28 23 23 24 049 23,157	132,900 138,200 123,000 127,900 138,000	366,723 442,178 195,093 200,919 147,974 106,472	83,832 67,084 56,782 63,165 59,296 56,088	EST 32,050 49,286 48,576 50,004 53,919 68,955	-9.47%	1,011,457 1,117,211 832,337 814,707 777,462 688,883
-	Nov	577,661 543,072 573,673 523,189 470,732 460,860	23.22 19.584 23.704 23.704		237,261 328,897 128,917 32,610	70,970 67,090 61,323 63,228 70,979	49,371 49,371 49,373 49,386 48,336 50,044 89,032	-12.19%	12.44% 73,608 867,932 988,430 813,184 665,363 591,755 651,545
	100	584,626 531,684 553,811 505,632 571,379 488,979	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		62,169 145,801 67,601 42,438 8,084	77,108 62,671 62,650 67,623 69,116	33,323 46,478 51,861 53,742 51,079	-1.19% -8.336	R, WATER, 14 777,434 736,933 674,054 744,670
t	FECTRIC	FY 95.5 FY 94.5 FY 93.5 FY 93.5 FY 93.5 FY 91.5	FY96 How Comm FY95 How Comm FY 94 How Comm FY 92 How Comm FY 92 How Comm FY 92 How Comm	008 FY 88 008 FY 88 008 FY 84 008 FY 83 008 FY 83	MATURALDAS F7868 F7868 F7 948 F7 938 F7 928 F7 928	WATER F7965 F7 945 F7 945 F7 945 F7 925	SEWER FYSGS FYSGS FY 94S FY 93S FY 93S FY 93S	FY96-FY95 MONTHLY DIFF	TOTAL MONTHLY SEWER, WATER, II FY96 FY 94 FY82 FY82 FY83 FY83 FY87 FY

Primary Acct.#: 20-3298-4510-18 Service Address: 2700, Bldg.,,B Pearl HFTMON Bldg. Service Acct.#: 10-3203-0426-1-8 Meter #: 382802B

DON'T SHOW BELOW! August-November 1995

).00232														
TOTAL	BILL		\$15.00	\$76.74	(\$61.47	\$100.79		\$40,560.53		\$47.09	\$663.60	\$553.11	\$184.04	\$42,139.44
Rate								LLF		LLF	LLF	LLF	LLF	
Misc.	Adj.				(\$76.47)					(\$2.31)				
Levelized	Gas Adj.		\$0.1029	\$0.1029	\$0.1029	\$0.1029		\$0.1029		\$0.1029	\$0.1029	\$0.1029	\$0,1029	
> 3,000 Therms	\$ / Therm							\$0.6034		\$0.6034	\$0.6034	\$0.6034	\$0.6034	
<= 3,000 Therms	S / Therm		N/A	\$0.6210	N/A	\$0.6210		\$0.6326		\$0.6326	\$0.6326	\$0.6326	\$0.6326	
Customer	Charge		\$15.00	\$24.86	\$15.00	\$13.81		\$13.81		\$13.81	\$13.81	\$13.81	\$13.81	\$137.72
	Therms		0.00	71.67	0.00	120.16		57,283.20		48.39	883.47	733.24	231.44	59,372
Therm	Factor		1.060	1.054	1.054	1.054		1.053		1.052	1.053	1.052	1.052	
	MCF			8.9	0	11.4		5440		4.6	83.9	69.7	22	5,638.4
	Month	1994	July*	August*	September*	October*	1995	Esti. Use w/	Boiler typ mont	August*	September	October*	November	TOTAL:

"*" Denotes that billing for this month was either not read or not calculated.

ENTECH ENGINEERING INC.

C:\X123W\GASBIL3.WK4

Attachment 8.7

Natural Gas Rate Schedule

New Jersey GAS

IT WIGHT WIVER CENTER

******* 4130.c5

NEW RATE SCHEDULE

(Effective 1/1/95)

RESIDENTIAL

Customer Charge:

\$6.04

Commodity Charge:

\$.6362 per therm

Levelized Gas Adjustment

\$.1029 per therm for all therms

(Effective 12/1/93)

AIR CONDITIONING AND POOL HEATING

Upon separate application, customers who have installed, and are using gas air conditioning or gas pool heating equipment, will be billed on the above monthly rates except that the commodity charge will be \$.3115 per therm for all monthly consumption over 35 therms of gas for services rendered between May 1 and September 30 of each year. This commodity charge will be adjusted in a similar manner as the CAC service classification.

GENERAL SERVICE - HIGH LOAD FACTOR - 204, 206, 207, 208, 214, 216

218, 224, 226, 227, 228, 229 230, 253, 257, 281, 299

Customer Charge:

\$13.81 per month

Commodity Charge:

\$.6026 per therm for first 3,000 therms

\$.5734 per therm for all over 3,000 therms

Levelized Gas Adjustment

\$.1029 per therm for all therms

(Effective 12/1/93)

NEW RATE SCHEDULE (con't)

GENERAL SERVICE - LOW LOAD FACTOR - 004, 006, 007, 008, 014, 016

018, 024, 026, 027, 028, 029

030, 053, 057, 081, 099

Customer Charge: \$13.81 per month

Commodity Charge: \$.6326 per therm for first 3,000 therms

\$.6034 per therm for all over 3,000 therms

Levelized Gas Adjustment (Effective 12/1/93)

\$.1029 per therm for all therms

SERVICE CLASSIFICATION

Customers that have an initial load factor greater than 58 percent will be assigned to the GS-HLF classification. Customers that have an initial load factor equal to or less than 58 percent will be assigned to the GS-LLF classification.

CALCULATION OF LOAD FACTOR

Each customer's load factor will be equal to the result of dividing:

a) the total annual usage by

b) the highest single month's usage times 12

Load Factor = Total Annual Use
Highest Month's Use X 12

REVIEW OF LOAD FACTORS

The Company shall review, once a year, each load factor based on the most recent 12 months of billing information.

The Company shall review a load factor any time the Customer makes a written request to the Company.

NEW RATE SCHEDULE (con't)

CHANGE IN SERVICE CLASSIFICATION

After the initial assignment, if a customer's load factor increases above 61 percent, classification will be switched to the GS-HLF.

The Company will change a customer's service classificataion based upon a load factor review. No service classification changes will be made without 12 months of valid billing data.

A new customer will be assigned an initial load factor by the Company based on an evaluation of the customer's equipment and anticipated gas consumption patterns.

INTERRUPTIBLES

Bill Code = 2

05-3200

05-3204

- Customer Service does not calculate these the same as Residential or General Service.
- ♦ These are negotiated items. Carol Procassini, Rates Department, gets them and calls on billing concerning Interruptibles go to Barbara Roma.
- ♦ These accounts are read every month.

CALCULATION

REGULAR AND PRO-RATED PERIODS

- 1. A regular bill covers a period of 26 to 34 days.
- 2. A pro-rated bill covers a period less than 26 days or more than 34 days. It assures that the rate is appropriately applied to the days in the period that are greater or less than the days in the regular bill period.

LGA (Levelized Gas Adjustment)

- 1. The LGA is an amount added to the bill. To calculate the LGA amount, multiply the monthly LGA cost factor by the number of therms being billed.
- 2. Refer to the Standard Response se0ction for a more detailed definition.

REGULAR BILL CALCULATIONS - EXAMPLE

Problem:

Rate 003 customer uses 121 CCF during a 30-day period. January 10, 1995 through February 10, 1995. LGA factor is .1029.

Step 1

 $121 \operatorname{ccf} x 1.046 \operatorname{Therm} \operatorname{Factor} = 126.57 \operatorname{therms}$ to be billed

Rate 003 = residential service rate (RS)

Step 2

126.57 Therms to be Billed

Customer Charge	\$ 6.04
126.57 Therm @ .6362	\$80.52
Bill Amount	\$86.56

Step 3

126.57 therms x .1029 = \$13.02 LGA

Step 4

126.57 therms x.0073 WNA = (\$.92)

Step 5

Bill Amount	\$86.56
LGA	\$13.02
WNA	\$ (.92)
Total Bill	\$98.66

Effective January 1, 1995

CALCULATION (con't)

GENERAL SERVICE RATES (GS) - RATE CODES - 004-014-029

006-016-007

008-018-053-057

083-086-089-099

Problem:

Rate 008 customer uses 3622 CCF during a 27-day period. January 10, 1995 through February 6, 1995. LGA factor is .1029.

Step 1

 $3622 \text{ CCF } \times 1.044 \text{ therm factor} = 3781.37 \text{ therms to be billed.}$

Rate 008 = General Service Rate (GS)

Step 2

3781.37 therms to be billed

Customer Charge	\$ 13.81
First 3000 therms at .6326 each	\$1897.80
781.37 therms at .6034 each	\$ <u>471.48</u>
Bill Amount	\$2,383.09

Step 3

3781.37 therms x.1029 LGA factor = \$389.10 LGA

Step 4

3781.37 therms x.0073 WNA = (\$27.60)

Step 5

Bill Amount	•	\$2383.09
LGA		\$ 389.10
WNA		\$ (27.60)
Total Bill		\$2744.59

Attachment 8.8

Building 2700 Boiler Logs

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4 1 40V P. 3967 RIPLACES DA FORM SOR I HIN M WHICH WILL BE USED.

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DA 1 HOV TO 3967 REPLACES DA FORM 598. 1 JUN 68, WHICH WILL BE USED.

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EVAPOHATIC	JN LB. STEA!	EVAPOHATION LB. STEAM PER LB. STO. FUEL	D. FUEL		FUEL USED I	FUEL USED DURING MONTH ISTANDARD TONS	TH ISTANDA	RD TONS)				REMARKS	1			7		
					0 000 4 0000	,						J	10	ber	-/66	3		
	SEE A FOR I	SEE NELLASE SIDE FOR INSTRUCTIONS			FREFARED BY	>			<u> </u>	DATE		APPROVED BY					DATE	
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JA INOV R 3967 REPLACES DA FORM 598. I JUN 58, WHICH WILL BE USED. 2 2060

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		TIES ENGIN	ENGINEERING	OPERATING LOG	NG LOG	(Noiter l'Iunt)		Υ (FI Y	(LI ATION			1			PLANT	; 		BLDG NO
	For use of this	5	1 420 49, the p	roponent agen	see AH 420 49, the proponent agency is the Corps of Engineers.	s of Engineers.		14	M.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, ,				:		<u>'</u>	:
		ST	STEAM PHODUCED	UCED		HEED			, , , , ,	FEEDIN	FEED VATER HEATER	AYER		\neg), 7777	73/11)	1777	17.
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	fok i	FOR INSTRUCTIONS				_			<u>a</u> _	DATE	<	PPROVED	APPROVED BY				DAIE	
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DA 1 HOV 72 3967 REPLACES DA FORM S 98. 1 JUN 59, WHICH WILL BE USED.

F	FAC. IE	IES ENGINEERING OPERATING LOG (Hunter Plant	EERING (DPERATE	DOT DN	(Hoiter Plant)		EN EN	LATION						PLANT			B1 DG 110	1
ĭ	for any of thus	of this form, see AH 420.49, the proponent agency is the Corps of Engineer	470 49, the pr	unde tuevodo:	cy is the Corps	of Engineers.		FT.	121	2	,171,					2	1	1	
[ST	STEAM PRODUCED	UCED		FEED			7.	FEEDWATER HEATER	ATER HE	ATER		% CO.	, איזע עייאן	MYCE CIRI 27	CIR	22	Ü
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APORATION LB		STEAM PER 18. STD. FUEL	D. FUEL		FUEL USED	FUEL USED DUIHING MONTH (STANDARD TONS	TH ISTANDA	AD TONS!				REMARKS							
												' '	Done	andmond (1	1993			
	1 315	SALE METRICS SIDE			PREPARED BY	<u>}</u>			_	DATE		APPROVED BY	À	H			DATE		5
		2000							_										
FORM	A 20G7															1			

	4																	
<u></u>	FA TIE	S ENGIN	EERING	TIES ENGINEERING OPERATING LOG		(Boiler Plant)		ALLATION	TIOH						PLANT			BLDG M
1	fur use of this	form, sue Af	1 420 49, the p	wite mentalon	use of this form, see AH 420.49, the projonent aguncy is the Corps of Engineers	e of Engineers.		FT.	min	Time.	رم					0.00	0	;
		S	STEAM PRODUCED	OUCED		FEED			777	<u> </u>	FEEDWATER HEATER	ATER		, CO.	, ייביון	ייייל גר	K (K)	773
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	SLE N FOR L	SLE REVERSE SIDE FOR INSTRUCTIONS			PREPARED BY	≥		!		DATE		APPROVED BY) BY				DATE	
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DA 1 NOV 12 3967 REPLACES DA FORM 598. 1 JUN 68, WHICH WILL BE USED.

	FAC (IE	ENGIN	EERING	TIES ENGINEERING OPERATING OG		(Huder Phase)		<u> </u>	LATION						PLANT			20.00	
	for use of this	lorm, see Ab	1 420 49, Iliu p	Hoponent agen		of Liginosia.		ET.	w	-	{-								2
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14 I NOV 73 3967 REPLACES DA FORM 598. I JUN 56, WHICH WILL BE USFO.

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for use of this form.	ins form, sue Al	1 420 49, the p	nobouent eder	see AH 420 49, the proponent agency is the Corps of Engines	s of Enginee's		FT.	m		7					,		
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	tor use of this	furm soe AR	1 420 49, the g	and mountant	for uso of this form, see AR 420 49, the proprintent againsy to the Corps of Engineers.	s of Engineers.			Fil	27	(100)	۲,			ŀ		1	
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DA 1 HOV 72 3967 REPLACES DA FORM 598 1 JUN 59, WHICH WILL BE USED.

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	to use of thus	form, see Alt	4.20 49, the p	nopa Inonocion	har use of this form, see AH 420 49, the proponent agency is the Corps of Engine	of Engineers.			M	22.	L. 1.26.					3		í
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	FAC TIE	S ENGIN	FIES ENGINEERING OPERATING LOG (Ilmiter Plant)	DPERATE	901 9N	Buder Plant		h, ALLATION	NOIT						PLANI			011 20 11	10
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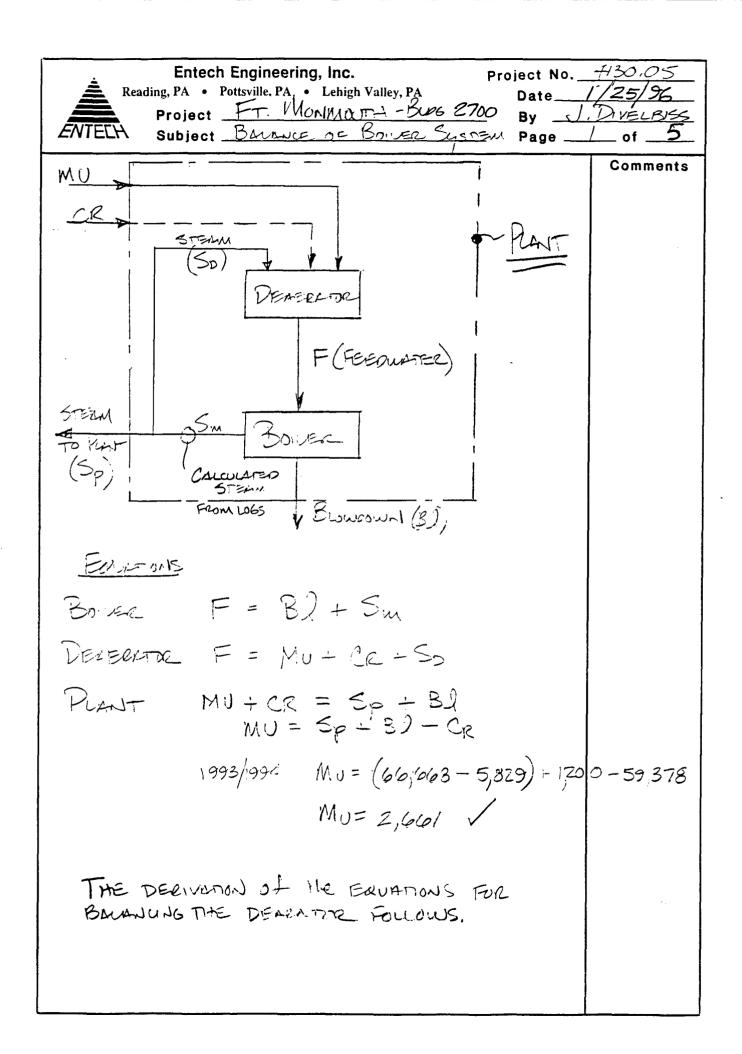
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1 8	7		74300		103 82		280	477	8.2		10	3/10		İ			777	
<i>n</i>	-		2000	2	78/85/	7,	760	7/10	7.5	1	3/2	3000				Ť	北北	
1.2	27, 1		777 777	1	10200	1/2/	727	╗	7	1	7	3200	20				77.77	
æ	0.01/1/2		10500	122		12 12	100	卞	Ī	পূ	7	3/00	2/				1776	
æ	5,33			7.7	70,000		-75%	4/7	* 20° -	الر	3	3500	0				417	
5	1676		109ar	3	10000		200	-	٦	小		3000					2/12	
TOTAL			3/8	0006	+	1/201		10	Ţ	17.23	77.77	ではず					477	
MANIMUM			7				1		Ţ		7	7	1,00		İ			
I.MIRIMUM.										Ī	İ	1	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;		-	-	1 ::	:
AVEHAGE									İ	 					-	i	:	
I VAPORAT.	IVAPORATION IB. STEAM PER LU		STD. FUEL		FUEL USED (FUEL USED DURING MONTH (STANDARD TONS)	H (STANDA	RD TONSI				DENTACKE			_			
											<u>-</u>	S VILLE OF THE STATE OF THE STA	P.		01	200		
	SEE ME	SEE MELLASE SIDE FUR INSTRUCTIONS			PREPARED BY	>				D. TE		APPROVED DY		742	٦,		DATE	
NA FORM	1																	
7177	/ HIII /	3.7 4 10 13																

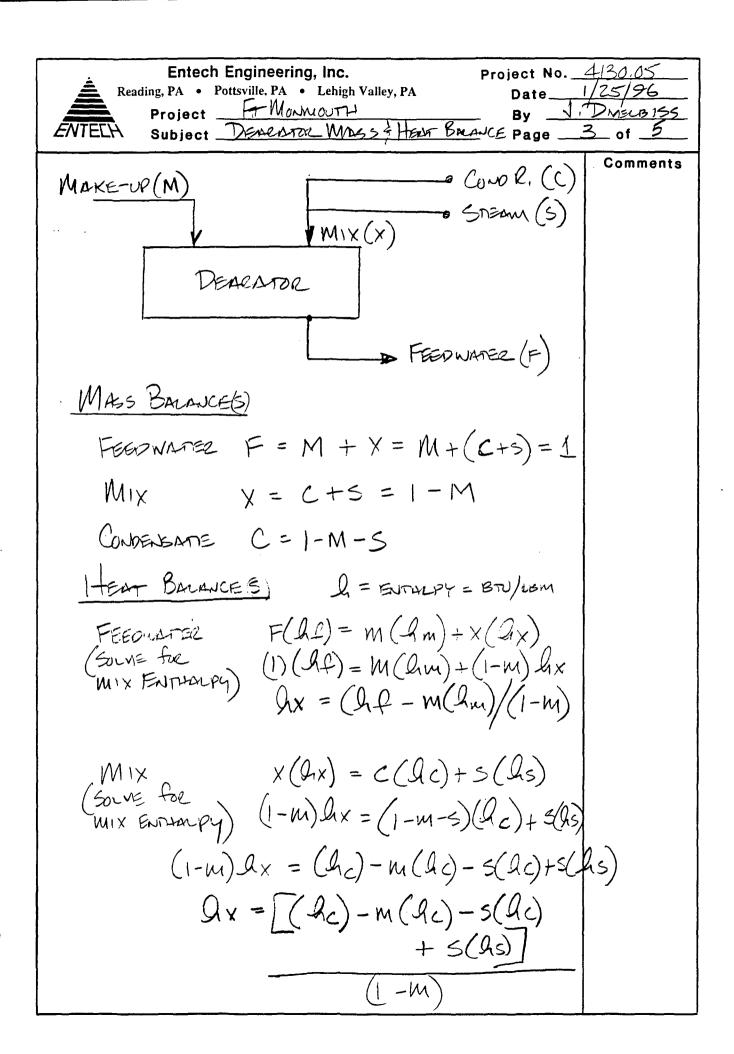
IN THAT BY THE ACTES ON FORMS OF THE OR WHICH WILL BE USEN

Attachment 8.9

Boiler Plant Steam Use Calculations



Entech Engineering, Inc. Project No	4130.05
	125/96
Project FT MUNMOUTH - BCD6 2700 By 17	DIVELDISS
ENTECH Subject DEWELLOW MASS HENT BALAKEPAGE	2_ of _5_
PROBLEMS BALANCE DEALATOR BASED ON KNOWN/ESTIMATED MAKEUP WATER PELATIVE TO FEEDWATER=1	Comments
CONDITIONS: MAKE-UP RATE % = VARIES (GIVEN) "TEMP = 50°F (AMERAGE) "ENTHALPY = 18 BTV/LBM CONDENSATE TEMP = 150°F (AMERAGE) "ENTHALPY = 118 BTV/LBM "RATE % = UNKNOWN (SOLVE %) MIX TEMP = NOT REQUIRED MIX ENTHALPY = "" "MIX RATE % = 1- CONDENSATE FE FEEDWATER TEMP = 212°F (AME) FEEDWATER RATE % = 100% (UNITY	Sanveages > 85 PSI6 THEOTTLES TO 2215-20
Appearch: TO SOLVE FOR BALANCE BETWEEN KNOWN MOKE-UP WATER PLUS MIX (STEAM + COND, RETURN) TO FERULL FEEDWATER OUT TO BOILER.	
(1) SOLVE FOR STEAM REQUIRED FIRST IN PERCENT (%).	
2) Solve FOR CONDENSAGE REQUIRED.	
1-MAKE-UP-STEAM = CONDENSATE(%)	

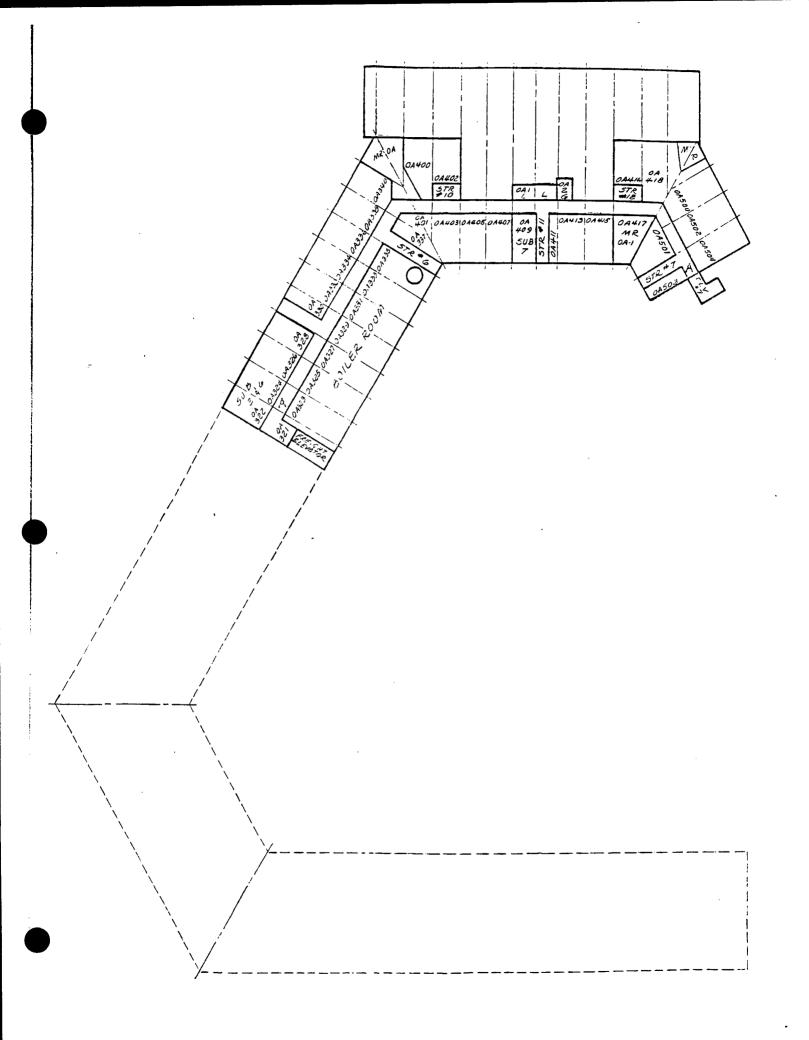


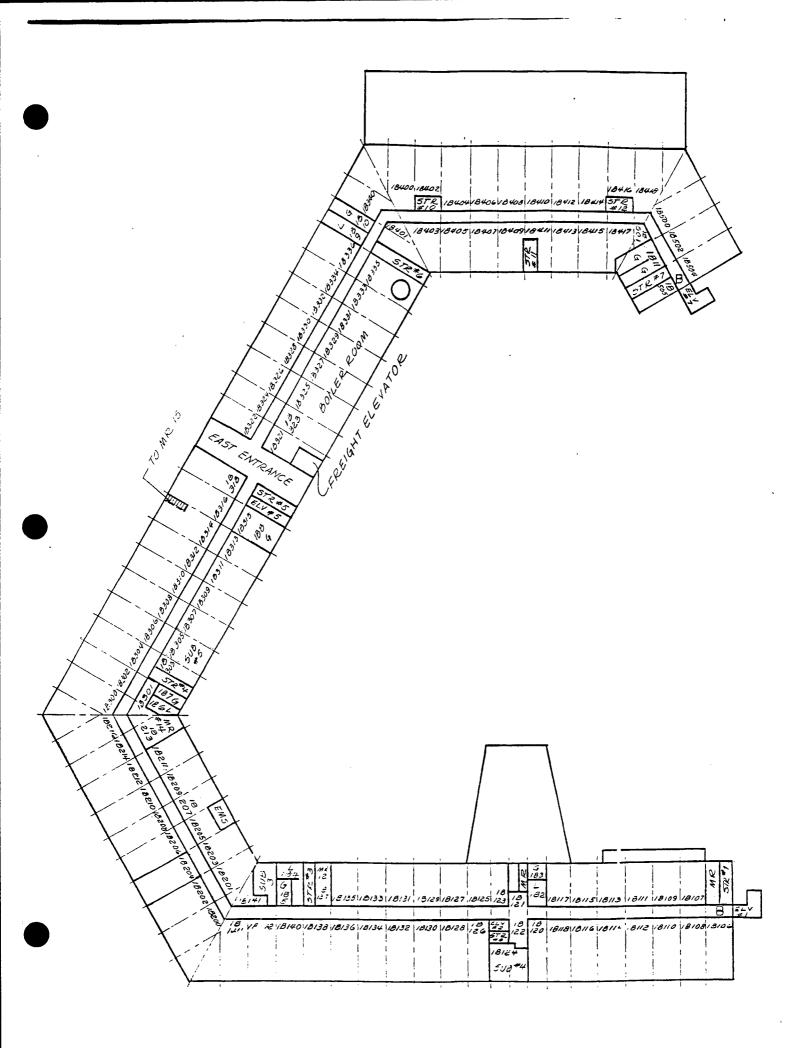
Entech Engineering, Inc. Reading, PA • Pottsville, PA • Lehigh Valley, PA Date	4130.05
Project FORT MONNOUTH - BLOG 2700 By J.	DIVEUBISS
ENTELH Subject DEALATOR MASS & HEAT BRANCE Page	
SETTINGS DX EQUAL TO EACH	Comments
· · · & SOLVING FOR STEAM (S)	
$Q_{x} = Q_{x}$	
(FEEDUATEZ) (MIX) ELEUATION)	
(hf-m(hm))/(1-m)=[(Ac)-m(hc)-s(Ac)+	s(hs)]
(Int)	
af-m(hm) = hc-m(hc)-s(hc)+s(hs)	l '
5(hs) - 5(hc) = hf - m(hm) - hc + m(h	د)
5= [(af-ac) - m (am-ac)]/(as-ac)	STEANU RATE
C=1-M-5 CONDENSATE RATE	
Example: 5% Waxe-up RATE	
5= [(180-118)-(05)(18-118)]/(1187,2-118	
5= [62+5]/1069.2	
5= 0.06266 × 100 = 6.266% (STEA	m)
C = 1-0.0506266 = 0.887 °C 38.7,	O (CONDENSATE)
(SEE PG 5 OF 5 ATTHERED WHICH IS. A SPREHDSHEET OF THESE CALCULATIONS)	

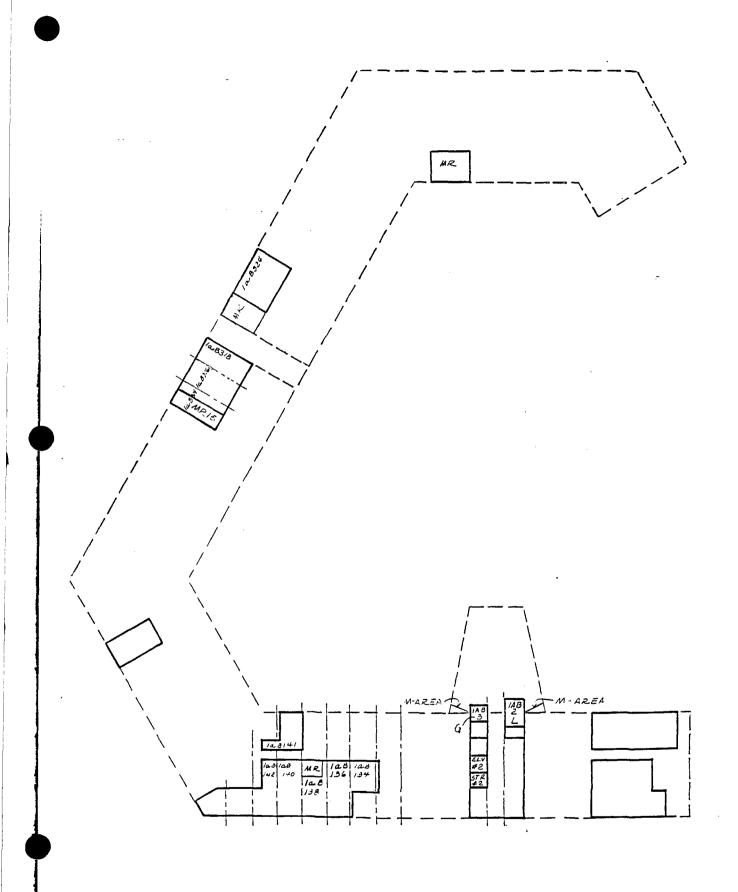
_		Feedwater (Btu/lbm)	Make-Up (%)	Make-Up Ave. Temp.(F)	Make-Up (Btu/lbm)		Condensate Ave. Temp.(F)		Heat. Steam (% - Calc.)	Heat. Steam (Btu/lbm)
	212	180	1.2%		18		150	118	5.911%	1187.2
	212		1.4%	50	18	92.7%		118	5.930%	1187.2
	212 212		1.6% 1.8%	50 50	18 18	92.5% 92.2%		118	5.948% 5.967%	1187.2
	212		2.0%	50	18	92.2%	•	118 118	5.986%	1187.2 1187.2
	212		2.2%	50	18	91.8%		118	6.004%	1187.2
	212		2.4%	50	18	91.6%		118	8.023%	1187.2
	212		2.6%	50	18	91.4%		118	8.042%	1187.2
	212 212		2.8% 3.0%	50 50	18 18	91.1% 90.9%		118 118	6.061% 6.079%	1187.2 1187.2
<u> </u>	212	180	3.2%	50	18	90.7%		118	6.098%	1187.2
	212	180	3.4%	50	18	90.5%		118	6.117%	1187.2
	212		3.6%	50	18	90.3%		118	6.135%	1187.2
	212 212		3.8% 4.0%	50 50	18 18	90.0%		118 118	6.154% 6.173%	1187.2
	212		4.2%	50	18	89.8% 89.6%	150	118	6.192%	1187.2 1187.2
	212		4.4%	50	18	89.4%		118	6.210%	1187.2
	212		4.6%	50	18	89.2%	150	118	6.229%	1187.2
	212		4.8%	50	18	89.0%	150	118	6.248%	1187.2
	212 212		5.0% 5.2%	50 50	18 18	88.7% 88.5%	150	118 118	6.266% 6.285%	1187.2 1187.2
	212		5.4%	50	18	88.3%	150	118	6.304%	1187.2
	212		5.6%	50	18	88.1%		118	6.322%	1187.2
	212	180	5.8%	50	18	87.9%	150	118	6.341%	1187.2
	212 212		6.0% 6.2%	50	18 18	87.6%	150	118 118	6.360%	1187.2
	212		6.4%	50	18	87.4% 87.2%	150	118	6.379% 6.397%	1187.2 1187.2
	212	180	6.6%	50	18	87.0%		118	6.416%	1187.2
	212	180	6.8%	50	18	86.8%		118	6.435%	1187.2
	212	180	7.0%	50	18	86.5%	150	118	6.453%	1187.2
	212 212	180 180	7.2% 7.4%	50 50	18 18	86.3% 86.1%	150	118 118	6.472% 6.491%	1187.2 1187.2
	212	180	7.6%	50	18	85.9%	150	118	6.510%	1187.2
	212		7.8%	50	18	85.7%	150	118	6.528%	1187.2
	212	180	8.0%	50	18	85.5%	150	118	6.547%	1187.2
	212	180 180	8.2% 8.4%	50 50	18 18	85.2% 85.0%	150 150	118 118	6.566% 6.584%	1187.2 1187.2
	212		8.6%	50	18	84.8%	150	118	6.603%	1187.2
	212		8.8%	50	18	84.6%	150	118	6.622%	1187.2
	212		9.0%	50	18	84.4%		118	6.640%	1187.2
	212 212	180 180	9.2% 9.4%	50 50	18 18	84.1% 83.9%	150 150	118 118	6.659% 6.678%	1187.2 1187.2
	212	180	9.6%	50	18	83.7%	150	118	6.697%	1187.2
	212	180	9.8%	50	18	83.5%	150	118	6.715%	1187.2
	212		10.0%	50	18	83.3%	150	118	6.734%	1187.2
	212		10.2% 10.4%	50	18 18	83.0% 82.8%		118 118	6.753%	1187.2 1187.2
	212		10.6%	50	18	82.6%		118	6.790%	1187.2
	212		10.8%	50	18	82.4%		118	6.809%	1187.2
<u> </u>	212		11.0%	50	18	82.2%		118	6.828%	1187.2
	212 212	180 180	11.2% 11.4%	50 50	18 18	82.0% 81.7%	150 150	118 118	6.846% 6.865%	1187.2 1187.2
	212	180	11.6%	50	18	81.5%	150	118	6.884%	1187.2
	212	180	11.8%	50	18			118	6.902%	1187.2
	212	180	12.0%	50	18	81.1%	150	118	6.921%	1187.2
	212		12.2% 12.4%	50 50	18 18	80.9%		118	6.940%	1187.2
_	212		12.4%	50	18	80.6% 80.4%		118 118	6.958% 6.977%	1187.2 1187.2
	212	180	12.8%	50	18	80.2%		118	6.996%	1187.2
	212		13.0%	50	18	80.0%		118	7.015%	1187.2
	212		13.2%	50	18	79.8%		118	7.033%	1187.2
-	212		13.4% 13.6%	50 50	18 18	79.5% 79.3%		118 118	7.052% 7.071% I	1187.2 1187.2
	212		13.8%	50	18	79.1%		118	7.089%	1187.2
	212	180	14.0%	50	18	78.9%	150	118	7.108%	1187.2
	212		14.2%	50	18	78.7%		118	7.127%	1187.2
	212		14.4% 14.6%	50 50	18	78.5%		118	7.146% 7.164%	1187.2
	212		14.8%	50	18 18	78.2% 78.0%		118 118	7.183%	1187.2 1187.2
	212		15.0%	50	18	77.8%		118	7.202%	1187.2
	212		15.2%	50	18	77.6%	150	118	7.220%	1187.2
	212		15.4%		18	77.4%		118	7.239%	1187.2
	212		15.6% 15.8%	50 l	18 18	77.1% 76.9%	150	118 118	7.258% 7.276%	1187.2 1187.2
	212		16.0%	501	18	76.7%		118	7.295%	1187.2
	212	180	16.2%	50	18	76.5%		118	7.314%	1187.2
	212		16.4%	50	18	76.3%		118	7.333%	1187.2
ļ	212		16.6% 16.8%	50 S	18 18	76.0%		118 118	7.351% 7.370%	1187.2 1187.2
	212		17.0%		18	75.8% 75.6%			7.370%	1187.2

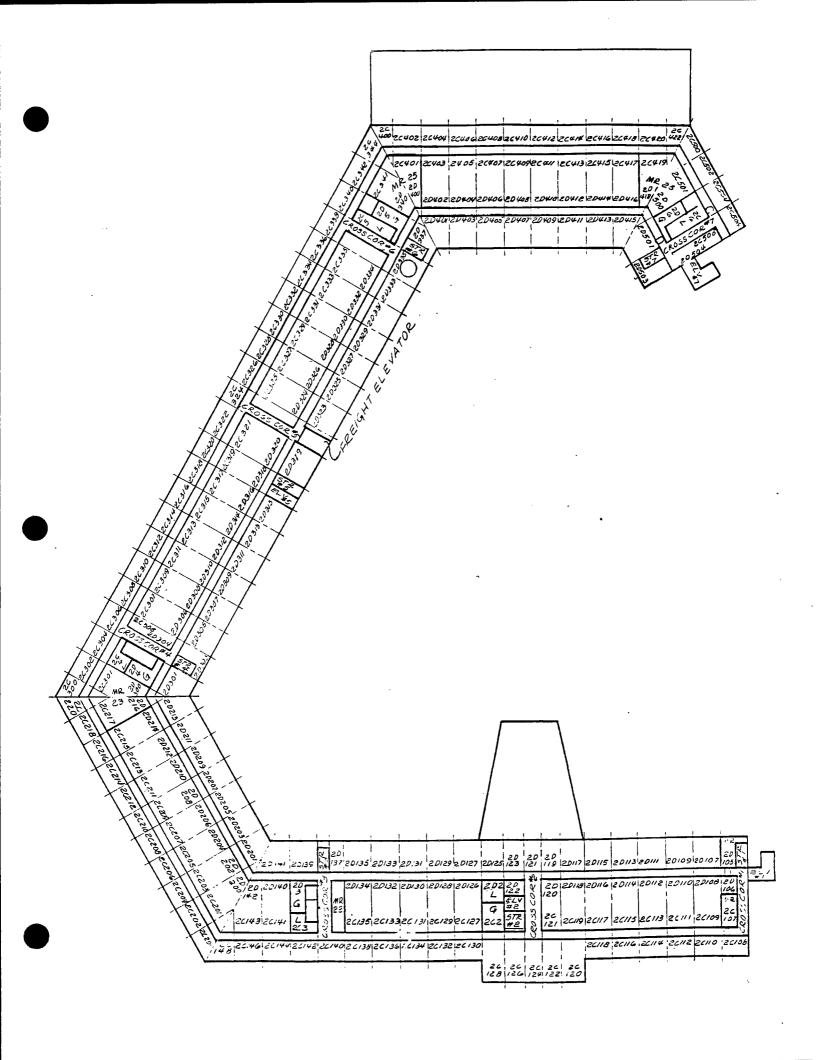
Attachment 8.10

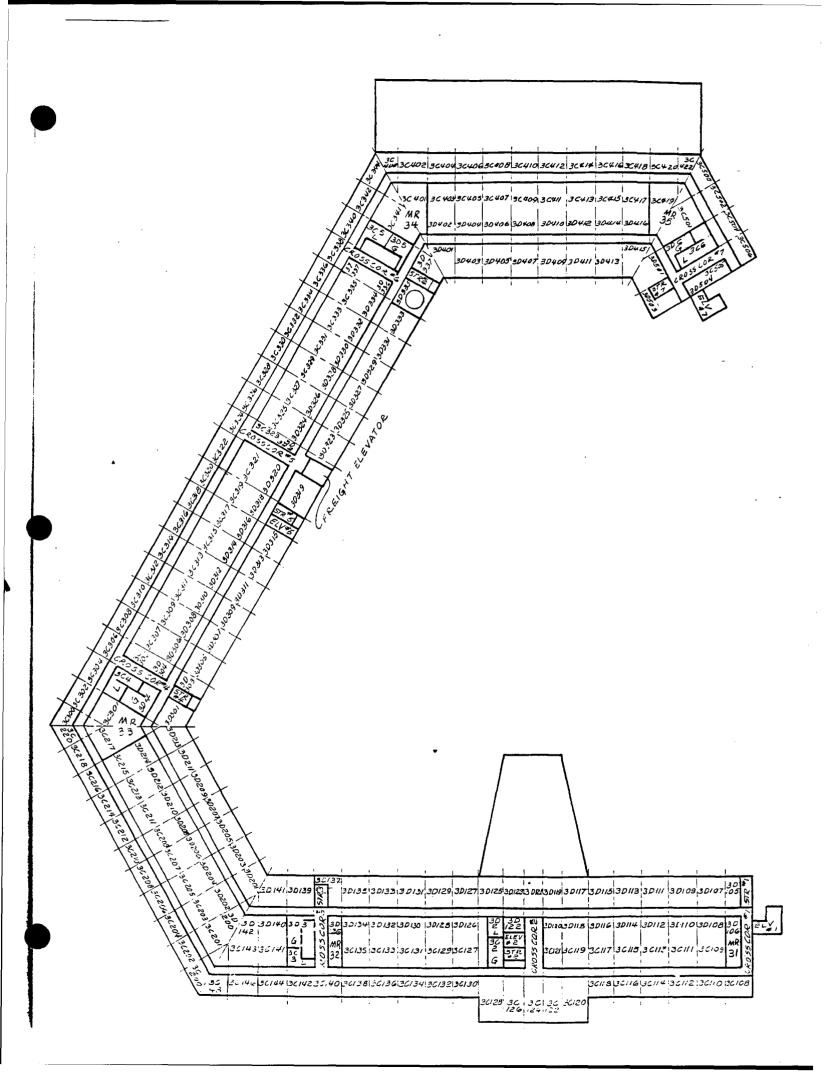
Building 2700 Room Numbers

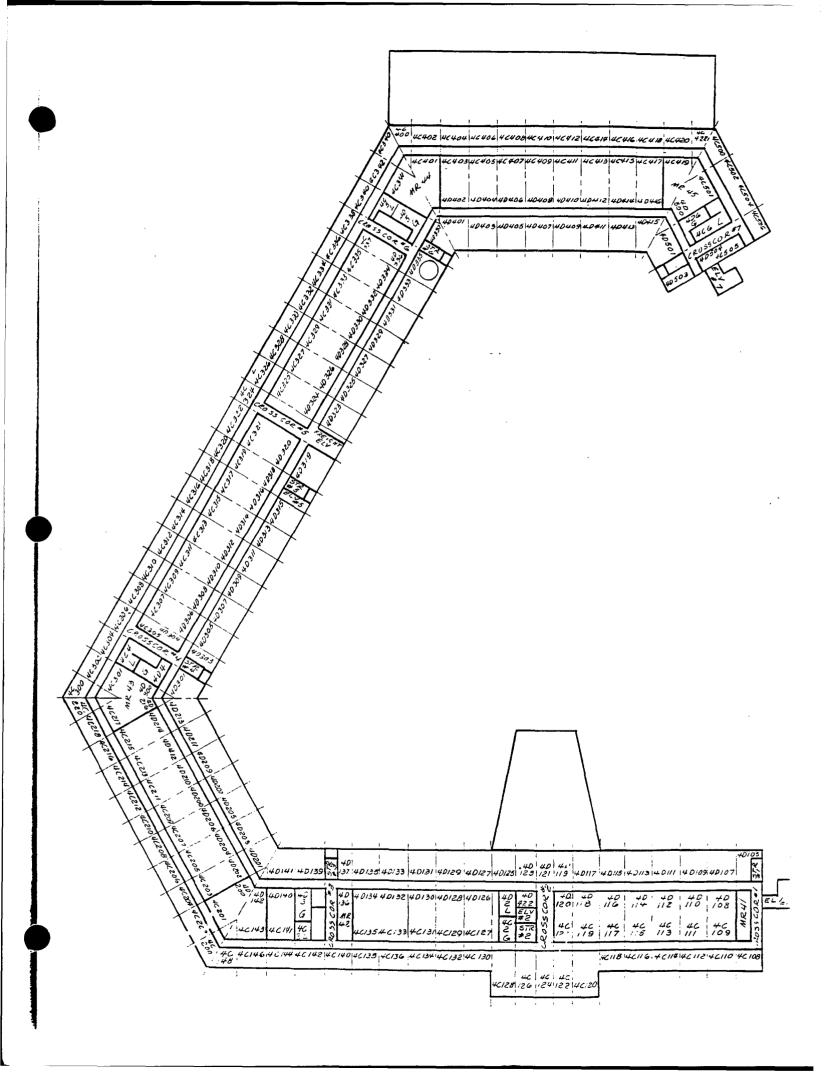


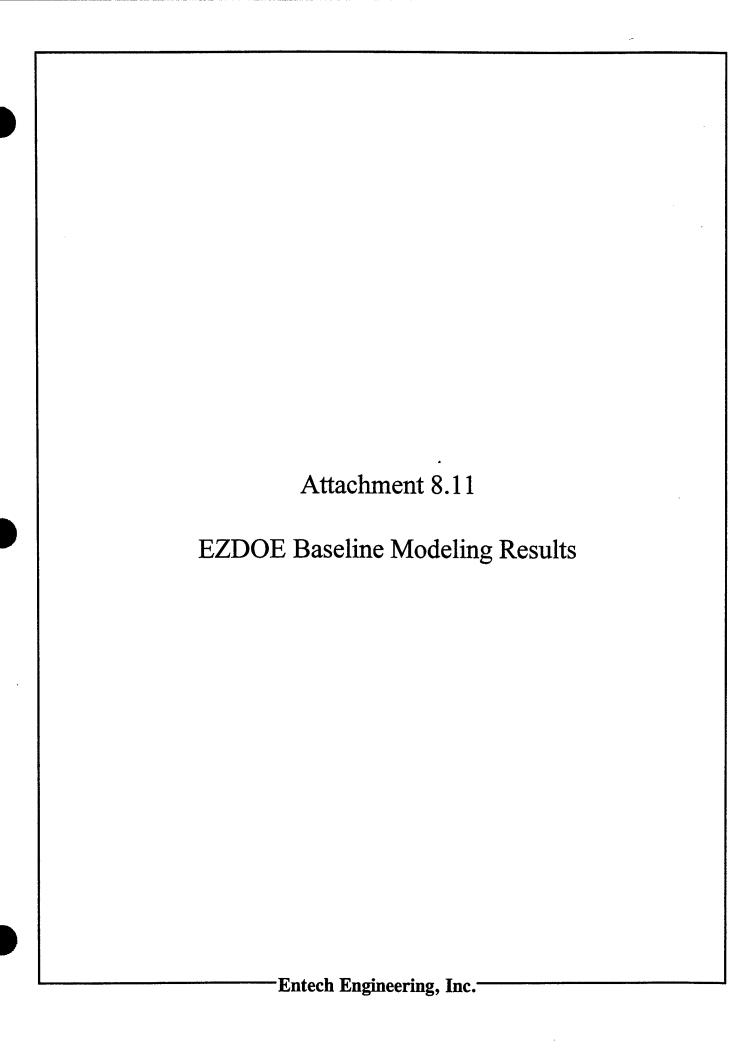












```
$----$
                $EZ-DOE LOADS INPUT$
                   S GENERAL PROJECT DATA
TITLE
      LINE-1 *
                       ENTECH ENGINEERING
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
                   READING,
                                 PA
       LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ
       LINE-5 *FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
                  ERRORS
ABORT
DIAGNOSTIC
                  WARNINGS ..
LOADS-REPORT
                  SUMMARY=(LS-F)
BUILDING-LOCATION ALTITUDE = 15.
                  X-REF = 0.0
                  Y-REF = 0.0
                  JAN 1 1994 THRU DEC 31 1994
RUN-PERIOD
                   $ SCHEDULES
D24FULOFF =DAY-SCHEDULE
                        (1,24) (0.) ...
    JP01
          =DAY-SCHEDULE
                         (1,6) (0.07)
                          (7,8) (0.7,0.9)
                          (9,14) (1.)
                          (15,18) (0.9,0.7,0.25,0.15)
                          (19,24) (0.07) ...
                         (1,24) (0.07) ...
d24occofhr =DAY-SCHEDULE
                          (1,6) (0.1)
DWKLITE1
         =DAY-SCHEDULE
                          (7,8) (0.5,0.9)
                          (9,14) (1.)
                          (15,18) (0.9,0.7,0.25,0.15)
                          (19,24) (0.1) ...
                         (1,24) (0.1) ...
DNOTLITE1 =DAY-SCHEDULE
DINFILWIN1 =DAY-SCHEDULE
                          (1,24) (0.8) ...
DINFILSUM1 =DAY-SCHEDULE
                          (1,24) (0.8) ...
DFULON24 =DAY-SCHEDULE
                          (1,24) (1.) ...
DEQPWKDAY =DAY-SCHEDULE
                          (1,7) (0.15)
                          (8,19) (0.5)
                          (20,24) (0.15) ...
```

W24FULON7D =WEEK-SCHEDULE (ALL) DFULON24 ..

DEOAWKEND =DAY-SCHEDULE

(1,24) (0.15) ...

WOCC01	=WEEK-SCHE	EDULE	-	O) EH)	DOCCUP01 d24occof	hr	
VE1	=WEEK-SCHE	EDULE	-	O) EH)	DWKLITE1 DNOTLITE:	1	
WINFILWIN1	=WEEK-SCHE	EDULE	(AI	LL)	DINFILWI	N1	
WINFILSUM1	=WEEK-SCHE	EDULE	(AI	LL)	DINFILSU	Ml	
WHR16MAY	=WEEK-SCHE	EDULE	(TU (WE (TH (FF (SA (SU		D24FULOF D24FULOF D24FULOF D24FULOF D24FULOF	F F F F	•
WLFULOF	=WEEK-SCH	EDULE	(AI	ĽĽ)	D24FULOF	F	
WEQSCHA	=WEEK-SCH	(WD)		DEQPWKDA' DEQAWKENI			
•	LON 7D/WK V =SCHEDULE		DEC	31	W24FULON	7D	
LOADS	OCCUP SCH (=SCHEDULE		DEC	31	WOCC01	• •	
\$ YR LIGHT YLITE1	ING SCH 1/ =SCHEDULE		DEC	31	WLITE1		
\$ YR INFIL YINFIL1	SCHD 1 =SCHEDULE	THRU	OCT	15	WINFILWII WINFILSUI WINFILWII	M1	
\$ HRLY RPT HRMAY16	16MAY =SCHEDULE	THRU	MAY	16	WLFULOF WHR16MAY WLFULOF		
	MENT SCHDA =SCHEDULE		DEC	31	WEQSCHA		

\$ CONSTRUCTION TYPES

ROOF CON1 MAIN ROOF
ROOFCON1 =CONSTRUCTION U-VALUE = 0.100 ..
\$ EXTERIOR WAL1 TYP
EXWAL1 =CONSTRUCTION U-VALUE = 0.080 ..

S INTERIOR WALL 1 TYP U-VALUE = 0.480INTWAL1 = CONSTRUCTION $ABSORPTANCE = 0.000 \dots$ XTERIOR DOOR TYP 01 U=.4 EXTDR01 = CONSTRUCTION U-VALUE = 0.400\$ UNDER GRND WALL 1 =CONSTRUCTION U-VALUE = 0.100UWAL1 SHADING-COEF = 0.560GLTYP1 =GLASS-TYPE PANES = 1GLASS-CONDUCTANCE = 0.520 ... \$ SPACE DESCRIPTION 1EXTPER =SPACE AREA = 38634.0 VOLUME = 647120.0 TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3 INF-METHOD = NONEE-WHEIGHT = 22.3 WIDTH = 51.0 CONS = EXWAL1 AZIMUTH = 270WINDOW HEIGHT = 2.7 WIDTH = 41.3 G-T = GLTYP1 .. HEIGHT = 22.3 WIDTH = 96.0 CONS = EXWAL1 E-WAZIMUTH = 180. . WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 .. HEIGHT = 22.3E-WWIDTH = 183.0 CONS = EXWAL1 AZIMUTH = 135WINDOW HEIGHT = 2.7 WIDTH = 148.2 G-T = GLTYP1 .. HEIGHT = 22.3 WIDTH = 384.5 CONS = EXWAL1 E-WAZIMUTH = 90WINDOW HEIGHT = 2.7 WIDTH = 311.5 G-T = GLTYP1 .. HEIGHT = 7.0 WIDTH = 5.0 CONS = EXTDR01 DOOR MULTIPLIER = 2.0 E-WHEIGHT = 22.3WIDTH = 24.0 CONS = EXWAL1

WINDOW HEIGHT = 2.7 WIDTH = 19.4 G-T = GLTYP1 ..

E-W HEIGHT = 22.3 WIDTH = 50.0 CONS = EXWAL1 AZIMUTH = 315 ..

AZIMUTH = 45

1INTPER =SPACE

SPACE AREA = 7696.0 VOLUME = 128908.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3

INF-METHOD = NONE ..

E-W HEIGHT = 22.3 WIDTH = 156.0 CONS = EXWAL1 AZIMUTH = 315 ..

WINDOW HEIGHT = 2.7 WIDTH = 126.4 G-T = GLTYP1 ...

DOOR HEIGHT = 7.0 WIDTH = 5.0 CONS = ROOFCON1 ...

2EXTPER =SPACE

ACE AREA = 25789.0 VOLUME = 251443.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3

INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0

INF-SCHEDULE = YINFIL1 ...

E-W HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 AZIMUTH = 270 ...

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 96.0 CONS = EXWAL1 AZIMUTH = 180 ..

WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 280.0 CONS = EXWAL1 AZIMUTH = 135 ..

WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 548.0 CONS = EXWAL1 AZIMUTH = 90 ..

WINDOW HEIGHT = 2.7 WIDTH = 443.9 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 260.0 CONS = EXWAL1 AZIMUTH = 45 ..

WINDOW HEIGHT = 2.7 WIDTH = 210.6 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 382.0 CONS = EXWAL1 AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 309.0 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 AZIMUTH = 225 ...

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...

2INTPER =SPACE AREA = 20421.0 VOLUME = 199105.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3

INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0

INF-SCHEDULE = YINFIL1 ..

E-W HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 AZIMUTH = 270 ..

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 39.0 CONS = EXWAL1 AZIMUTH = 0 ..

WINDOW HEIGHT = 2.7 WIDTH = 31.6 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 166.0 CONS = EXWAL1 AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 135.0 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 433.0 CONS = EXWAL1 AZIMUTH = 270 ...

WINDOW HEIGHT = 2.7 WIDTH = 350.7 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 146.0 CONS = EXWAL1 AZIMUTH = 225 ..

WINDOW HEIGHT = 2.7 WIDTH = 118.3 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 427.0 CONS = EXWAL1 AZIMUTH = 135 ...

WINDOW HEIGHT = 2.7 WIDTH = 346.0 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 AZIMUTH = 225 ...

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...

2MIDL =SPACE AREA = 40144.0 VOLUME = 391404.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.8

INF-METHOD = NONE ..

```
HEIGHT = 15.3 WIDTH = 14.0 CONS = EXWAL1
  E-W
           AZIMUTH = 270
    WINDOW HEIGHT = 2.7 WIDTH = 11.3 G-T = GLTYP1 ...
           HEIGHT = 15.3 WIDTH = 165.0 CONS = EXWAL1
  E-W
           AZIMUTH = 315 ..
    WINDOW HEIGHT = 2.7 WIDTH = 133.7 G-T = GLTYP1 ..
           HEIGHT = 15.3 WIDTH = 70.0 CONS = EXWAL1
  E - W
           AZIMUTH = 225
     WINDOW HEIGHT = 2.7 WIDTH = 56.7 G-T = GLTYP1 ...
          AREA = 25789.0 VOLUME = 251443.0
=SPACE
          TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
          PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
          PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
          LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1
          LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
          EOUIP-SCHEDULE = YEOSCHA EOUIPMENT-W/SOFT = 1.3
          INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
          INF-SCHEDULE = YINFIL1
           HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
   E-W
            AZIMUTH = 270
     WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...
   E-W
            HEIGHT = 15.3 WIDTH = 96.0 CONS = EXWAL1
            AZIMUTH = 180 ...
     WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 ...
   E-W
            HEIGHT = 15.3 WIDTH = 280.0 CONS = EXWAL1
            AZIMUTH = 135
     WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ..
            HEIGHT = 15.3 WIDTH = 548.0 CONS = EXWAL1
   E-W
            AZIMUTH = 90
                          . .
     WINDOW HEIGHT = 2.7 WIDTH = 443.9 G-T = GLTYP1 ...
   E-W
            HEIGHT = 15.3 WIDTH = 260.0 CONS = EXWAL1
            AZIMUTH = 45
     WINDOW HEIGHT = 2.7 WIDTH = 210.6 G-T = GLTYP1 ..
   E-W
            HEIGHT = 15.3 WIDTH = 382.0 CONS = EXWAL1
            AZIMUTH = 315
     WINDOW HEIGHT = 2.7 WIDTH = 309.4 G-T = GLTYP1 ...
            HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
```

3EXTPER

E-W

AZIMUTH = 225

AREA = 49416.0 VOLUME = 481806.0 3MIDL =SPACE TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.8 INF-METHOD = NONE ...

> HEIGHT = 15.3 WIDTH = 14.0 CONS = EXWAL1 E-W $AZIMUTH = 270 \dots$

WINDOW HEIGHT = 2.7 WIDTH = 11.3 G-T = GLTYP1 ...

E-WHEIGHT = 15.3 WIDTH = 165.0 CONS = EXWAL1 AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 133.7 G-T = GLTYP1 ...

HEIGHT = 15.3 WIDTH = 70.0 CONS = EXWAL1 E-WAZIMUTH = 225 ..

WINDOW HEIGHT = 2.7 WIDTH = 56.7 G-T = GLTYP1 ...

3 TNTPER

AREA = 20421.0 VOLUME = 199105.0 =SPACE TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0 INF-SCHEDULE = YINFIL1

HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 E-WAZIMUTH = 270 ...

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ..

E-WHEIGHT = 15.3 WIDTH = 39.0 CONS = EXWAL1 AZIMUTH = 0 ..

WINDOW HEIGHT = 2.7 WIDTH = 31.6 G-T = GLTYP1 ...

E-WHEIGHT = 15.3 WIDTH = 166.0 CONS = EXWAL1 AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 135.0 G-T = GLTYP1 ...

E-W HEIGHT = 15.3 WIDTH = 433.0 CONS = EXWAL1 AZIMUTH = 270 ..

WINDOW HEIGHT = 2.7 WIDTH = 350.7 G-T = GLTYP1 ...

E - WHEIGHT = 15.3 WIDTH = 146.0 CONS = EXWAL1AZIMUTH = 225 ...

```
WINDOW HEIGHT = 2.7 WIDTH = 118.3 G-T = GLTYP1 ...
             E - W
                      HEIGHT = 15.3 WIDTH = 427.0 CONS = EXWAL1
                      AZIMUTH = 135 ..
               WINDOW HEIGHT = 2.7 WIDTH = 346.0 G-T = GLTYP1 ...
                      HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
             E-W
                      AZIMUTH = 225
               WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...
                    AREA = 25789.0 VOLUME = 251443.0
4EXTPER =SPACE
                    TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
                    PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
                    PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
                    LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1
                    LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
                    EQUIP-SCHEDULE = YEQSCHA EQUIPMENT-W/SQFT = 1.3
                    INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
                    INF-SCHEDULE = YINFIL1
                      HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
             E - W
                      AZIMUTH = 270 \dots
               WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...
                     HEIGHT = 15.3 WIDTH = 96.0 CONS = EXWAL1
             E-W
                      AZIMUTH = 180 ...
               WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 ..
                      HEIGHT = 15.3 WIDTH = 280.0 CONS = EXWAL1
             E - W
                      AZIMUTH = 135
               WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ...
                      HEIGHT = 15.3 WIDTH = 548.0 CONS = EXWAL1
              E-W
                      AZIMUTH = 90 ..
               WINDOW HEIGHT = 2.7 WIDTH = 443.9 G-T = GLTYP1 ...
                      HEIGHT = 15.3 WIDTH = 260.0 CONS = EXWAL1
              E-W
                      AZIMUTH = 45 ..
                WINDOW HEIGHT = 2.7 WIDTH = 210.6 G-T = GLTYP1 ...
                      HEIGHT = 15.3 WIDTH = 382.0 CONS = EXWAL1
              E-W
                      AZIMUTH = 315 ..
                WINDOW HEIGHT = 2.7 WIDTH = 309.4 G-T = GLTYP1 ..
                      HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
              E-W
                      AZIMUTH = 225
                WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...
```

ROOF HEIGHT = 257.9 WIDTH = 100.0 CONS = ROOFCON1

AREA = 36103.0 VOLUME = 352004.0 4MIDL =SPACE TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SOFT = 3.1 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EOUIP-SCHEDULE = YEOSCHA EOUIPMENT-W/SOFT = 1.8 EQUIPMENT-KW = 1.0 INF-METHOD = NONE E-WHEIGHT = 15.3 WIDTH = 14.0 CONS = EXWAL1 AZIMUTH = 270WINDOW HEIGHT = 2.7 WIDTH = 11.3 G-T = GLTYP1 .. HEIGHT = 15.3 WIDTH = 165.0 CONS = EXWAL1 E-WAZIMUTH = 315 .. WINDOW HEIGHT = 2.7 WIDTH = 133.7 G-T = GLTYP1 .. HEIGHT = 15.3 WIDTH = 70.0 CONS = EXWAL1 E-WAZIMUTH = 225 .. WINDOW HEIGHT = 2.7 WIDTH = 56.7 G-T = GLTYP1 .. ROOF HEIGHT = 361.0 WIDTH = 100.0 CONS = ROOFCON1 TILT = 0AREA = 20421.0 VOLUME = 199105.0 4 INTPER =SPACE TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EOUIP-SCHEDULE = YEOSCHA EOUIPMENT-W/SOFT = 1.3 INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0 INF-SCHEDULE = YINFIL1 E-WHEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1 AZIMUTH = 270 ... E-W

WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 39.0 CONS = EXWAL1 AZIMUTH = 0 ..

WINDOW HEIGHT = 2.7 WIDTH = 31.6 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 166.0 CONS = EXWAL1 AZIMUTH = 315 ..

WINDOW HEIGHT = 2.7 WIDTH = 135.0 G-T = GLTYP1 ..

E-W HEIGHT = 15.3 WIDTH = 433.0 CONS = EXWAL1 AZIMUTH = 270 ..

WINDOW HEIGHT = 2.7 WIDTH = 350.7 G-T = GLTYP1 ..

```
HEIGHT = 15.3 WIDTH = 146.0 CONS = EXWAL1
             E-W
                     AZIMUTH = 225
               WINDOW HEIGHT = 2.7 WIDTH = 118.3 G-T = GLTYP1 ..
                     HEIGHT = 15.3 WIDTH = 427.0 CONS = EXWAL1
             E-W
                     AZIMUTH = 135 ...
               WINDOW HEIGHT = 2.7 WIDTH = 346.0 G-T = GLTYP1 ...
                     HEIGHT = 15.3 WIDTH = 17.0 CONS = EXWAL1
             E-W
                     AZIMUTH = 225 ..
               WINDOW HEIGHT = 2.7 WIDTH = 13.8 G-T = GLTYP1 ...
                     HEIGHT = 204.2 WIDTH = 100.0 CONS = ROOFCON1
             ROOF
                      TILT = 0 ..
                   AREA = 18905.0 VOLUME = 151240.0
OINTEXTPER =SPACE
                    TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
                    PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
                    PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
                    LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 3.1
                    LIGHTING-SCHEDULE = YLITE1 ·
                    EOUIP-SCHEDULE = Y24FULON7D EQUIPMENT-W/SQFT = 1.3
                    INF-METHOD = NONE
             E-W
                     HEIGHT = 14.0 WIDTH = 110.0 CONS = EXWAL1
                      AZIMUTH = 180 ...
               WINDOW HEIGHT = 2.7 WIDTH = 89.1 G-T = GLTYP1 ...
                      HEIGHT = 14.0 WIDTH = 60.5 CONS = EXWAL1
             E-W
                      AZIMUTH = 225
               WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ...
            U-W HEIGHT = 14.0 WIDTH = 75.0 CONS = UWAL1 ..
                    HEIGHT = 95.0 WIDTH = 39.0 CONS = UWAL1 ...
            U-W
                     HEIGHT = 14.0 WIDTH = 80.0 CONS = EXWAL1
             E-W
                      AZIMUTH = 135 ..
               WINDOW HEIGHT = 2.7 WIDTH = 64.8 G-T = GLTYP1 ..
             E-W
                      HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1
                      AZIMUTH = 270 \dots
               WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 ..
```

HEIGHT = 484.7 WIDTH = 39.0 CONS = ROOFCON1

END .. COMPUTE LOADS ..

ROOF

TILT = 0 ..

STUDY- FURCH #4130,05 FORT MONWOUTH EEAP (3) UNITS TOGENTER FIT A NOWINAL SIZE OF 120% OUTSIDE AR (293°DB) (293°DB) Cheaneeom 0=4 5 (50,000) (21,3-21.0) = 1,4175 mm Bru (ESTIMATED HEADING & COULDE LONDS) 118,1 TONS -> 155 HPACHILLER (21 KW/102) (3) 40 (1) 35 HEATING (lealant) = 1.1 (50,000) (60-51) 335,000 8+0/100, 335 MM = 1155000 of 1160 WbB. Cooks (2000) Crm w/ 20; Building 2700

```
$ GENERAL PROJECT DATA
                        ENTECH ENGINEERING
TITLE
      LINE-1 *
       LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
                    READING,
                                   PA
                                             19603
       LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
       LINE-5 *FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
ABORT
                  ERRORS
DIAGNOSTIC
                   WARNINGS ..
                   SUMMARY=(SS-A, SS-D)
SYSTEMS-REPORT
                   REPORT-FREQUENCY = MONTHLY ...
                     S SCHEDULES
D24FULON = DAY-SCHEDULE (1,24) (1.) ...
D24FULOF =DAY-SCHEDULE (1,24) (0.) ..
DHTSET1 =DAY-SCHEDULE (1,24) (72.) .. DCLSET1 =DAY-SCHEDULE (1,24) (75.) ..
DLOTMPNOHT =DAY-SCHEDULE (1,24) (0.) ..
DHITMPNOCL =DAY-SCHEDULE (1,24) (90.) ...
SCH_1 =DAY-SCHEDULE (1,24) (1.) ...
   _2 = DAY-SCHEDULE (1,24) (0.) ..
PKD = DAY-SCHEDULE (1,7) (1.)
                           (8,19) (0.)
                           (20,24) (1.) ...
         =DAY-SCHEDULE (1,7) (0.)
ON PKD
                           (8,19) (1.)
                           (20,24) (0.) ...
SET BACKD1 =DAY-SCHEDULE (1,5) (80.)
                           (6,19) (75.)
                           (20,24) (80.) ...
SET BACKD2 =DAY-SCHEDULE (1,24) (80.) ..
SET BACKD3 =DAY-SCHEDULE (1,5) (67.)
                           (6,19) (72.)
                           (20,24) (67.) ...
SET_BACKD4 =DAY-SCHEDULE (1,24) (67.) ...
FAN WKD = DAY-SCHEDULE (1,5) (0.)
                           (6,19) (1.)
                           (20,24) (0.) ...
FAN WKEND =DAY-SCHEDULE (1,24) (0.) ...
W24FULON =WEEK-SCHEDULE (ALL) D24FULON
WFULOF247D =WEEK-SCHEDULE (ALL) D24FULOF ...
WHTSET1 =WEEK-SCHEDULE (ALL) DHTSET1 ...
  LSET1
          =WEEK-SCHEDULE (ALL) DCLSET1
WLOTMPNOHT =WEEK-SCHEDULE (ALL) DLOTMPNOHT
WHITMPNOCL =WEEK-SCHEDULE (ALL) DHITMPNOCL
```

SEZ-DOE SYSTEMS INPUT\$

SCH_1W	=WEEK-SCHE	EDULE	(AI	LL)	SCH_1
SCH 2W	=WEEK-SCHE	EDULE	(AI	ĽĽ)	SCH_2
OF PKW	=WEEK-SCHE	EDULE	IW) IW)	O) EH)	OF_PKD D24FULON
ON_PKW	=WEEK-SCHE	EDULE	IW) IW)	O) EH)	ON_PKD D24FULOF
SET_BACKW1	=WEEK-SCHE	EDULE	IW)	O) EH)	SET_BACKD1 SET_BACKD2
SET_BACKW2	=WEEK-SCHE	EDULE	IW) IW)	O) EH)	SET_BACKD3 SET_BACKD4
FAN_WEEK	=WEEK-SCHE	EDULE	IW) IW)	O) EH)	FAN_WKD FAN_WKEND
\$ YR SCHD I YFULON247D				31	W24FULON
\$ YR SCHD F YHTSEAS1		THRU THRU	OCT	15	W24FULON WFULOF247D W24FULON
	OOL SEASON =SCHEDULE	THRU THRU	OCT	15	WFULOF247D W24FULON WFULOF247D
\$ YRSCH HTS YHTSET1		THRU THRU	MAY OCT	15	WHTSET1 WHTSET1 WHTSET1
\$ YRSCH COI YCLSET1		THRU THRU	OCT	15	WCLSET1 WCLSET1
SCH_1Y	=SCHEDULE	THRU	AUG	19	SCH_2W SCH_1W SCH_2W
OFF_PKY	=SCHEDULE	THRU	DEC	31	OFF_PKW
ON_PKY	=SCHEDULE	THRU	DEC	31	ON_PKW
SET_BACKY1	=SCHEDULE	THRU	DEC	31	SET_BACKW1
S BACKY2	=SCHEDULE	THRU	DEC	31	SET_BACKW2
FAN_YEAR	=SCHEDULE	THRU	DEC	31	FAN_WEEK

\$ ZONE DESCRIPTION

		P Bolla BBooker 11011
1EXTPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = SET_BACKY2 COOL-TEMP-SCH = SET_BACKY1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS
1INTPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = SET_BACKY2 COOL-TEMP-SCH = SET_BACKY1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS
2EXTPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS
2INTPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED . THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS
2. DL	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = SET_BACKY2 COOL-TEMP-SCH = SET_BACKY1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS HEATING-CAPACITY = -800000.0 COOLING-CAPACITY = 16800000.0
3EXTPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS
3MIDL	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = SET_BACKY2 COOL-TEMP-SCH = SET_BACKY1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS HEATING-CAPACITY = -800000.0 COOLING-CAPACITY = 16800000.0
TPER	=ZONE	DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0 HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC

SIZING-OPTION = FROM-LOADS

4EXTPER = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS .

4MIDL = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL
BASEBOARD-CTRL = THERMOSTATIC
SIZING-OPTION = FROM-LOADS
HEATING-CAPACITY = -800000.0
COOLING-CAPACITY = 16800000.0

4INTPER = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC SIZING-OPTION = FROM-LOADS .

OINTEXTPER = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = SET BACKY2 COOL-TEMP-SCH = SET BACKY1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS ...

\$ SYSTEM DESCRIPTION

1SMCAHUSZR =SYSTEM SYSTEM-TYPE = SZRH

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YHTSEAS1

COOLING-SCHEDULE = YCLSEAS1 PREHEAT-T = 0.0

OA-CONTROL = ENTHALPY HEATING-CAPACITY = -800000.0

MIN-OUTSIDE-AIR = 0.15 FAN-SCHEDULE = FAN YEAR

SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00098

NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0

MIN-CFM-RATIO = 1.0 COOL-FT-MIN = 0.

PREHEAT-SOURCE = HOT-WATER RETURN-AIR-PATH = DUCT

ZONE-NAMES = (1EXTPER, 1INTPER) ...

2SPERFC =SYSTEM SYSTEM-TYPE = TPFC

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YHTSEAS1 COOLING-SCHEDULE = YCLSEAS1

FAN-SCHEDULE = YFULON247D SUPPLY-DELTA-T = 0.2

SUPPLY-KW = 0.00007 NIGHT-CYCLE-CTRL = STAY-OFF

COOL-FT-MIN = 0.

ZONE-NAMES = (2EXTPER, 2INTPER) ...

ERFC =SYSTEM SYSTEM-TYPE = TPFC

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YHTSEAS1 COOLING-SCHEDULE = YCLSEAS1

FAN-SCHEDULE = YFULON247D SUPPLY-DELTA-T = 0.2

```
SUPPLY-KW = 0.00007 NIGHT-CYCLE-CTRL = STAY-OFF
                     COOL-FT-MIN = 0.
                     ZONE-NAMES = (3EXTPER, 3INTPER) ...
   ERFC
         =SYSTEM
                     SYSTEM-TYPE = TPFC
                     MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YHTSEAS1
                     COOLING-SCHEDULE = YCLSEAS1
                     FAN-SCHEDULE = YFULON247D SUPPLY-DELTA-T = 0.2
                     SUPPLY-KW = 0.00007 NIGHT-CYCLE-CTRL = STAY-OFF
                     COOL-FT-MIN = 0.
                     ZONE-NAMES = (4EXTPER, 4INTPER) ...
SSZF2MID =SYSTEM
                     SYSTEM-TYPE = SZRH
                     MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YHTSEAS1
                     COOLING-SCHEDULE = YCLSEAS1 PREHEAT-T = 0.0
                     OA-CONTROL = ENTHALPY SUPPLY-KW = 0.00007
                     MIN-OUTSIDE-AIR = 0.15 FAN-SCHEDULE = FAN YEAR
                     SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00098
                     NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
                     MIN-CFM-RATIO = 1.0 PREHEAT-SOURCE = HOT-WATER
                     RETURN-AIR-PATH = DUCT
                     ZONE-NAMES = (2MIDL) ..
SSFZ3MID =SYSTEM
                     SYSTEM-TYPE = SZRH
                     MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YHTSEAS1
                     COOLING-SCHEDULE = YCLSEAS1 PREHEAT-T = 0.0
                     OA-CONTROL = ENTHALPY SUPPLY-KW = 0.00007
                     MIN-OUTSIDE-AIR = 0.15 FAN-SCHEDULE = FAN YEAR
                     SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00098
                     NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
                     MIN-CFM-RATIO = 1.0 PREHEAT-SOURCE = HOT-WATER
                     RETURN-AIR-PATH = DUCT
                     ZONE-NAMES = (3MIDL)
SSZF4MID =SYSTEM
                     SYSTEM-TYPE = SZRH
                     MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YHTSEAS1
                     COOLING-SCHEDULE = YCLSEAS1 PREHEAT-T = 0.0
                     OA-CONTROL = ENTHALPY SUPPLY-KW = 0.00007
                     MIN-OUTSIDE-AIR = 0.15 FAN-SCHEDULE = FAN YEAR
                     SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00098
                     NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
                     MIN-CFM-RATIO = 1.0 PREHEAT-SOURCE = HOT-WATER
                     RETURN-AIR-PATH = DUCT
                     ZONE-NAMES = (4MIDL) ...
OSMCAHUSZR =SYSTEM
                     SYSTEM-TYPE = SZRH
                     MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YHTSEAS1
                     COOLING-SCHEDULE = YCLSEAS1 PREHEAT-T = 0.0
                     OA-CONTROL = ENTHALPY SUPPLY-KW = 0.00007
                     MIN-OUTSIDE-AIR = 0.15 FAN-SCHEDULE = FAN YEAR
                     SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00098
                     NIGHT-CYCLE-CTRL = CYCLE-ON-ANY NIGHT-VENT-DT = 0.0
                     MIN-CFM-RATIO = 1.0 COOL-FT-MIN = 0.
                     PREHEAT-SOURCE = HOT-WATER
```

ZONE-NAMES = (OINTEXTPER) ...

\$ HOURLY REPORT DESCRIPTION

```
=REPORT-BLOCK VARIABLE-TYPE = 1SMCAHUSZR
                        VARIABLE-LIST = (49) ...
     =REPORT-BLOCK VARIABLE-TYPE = 2SPERFC
SY 2
                        VARIABLE-LIST = (49) ...
SY 3
        =REPORT-BLOCK VARIABLE-TYPE = 3SPERFC
                        VARIABLE-LIST = (49) ...
     =REPORT-BLOCK VARIABLE-TYPE = 4SPERFC
SY_4
                        VARIABLE-LIST = (49) ...
SY_5
     =REPORT-BLOCK VARIABLE-TYPE = SSZF2MID
                        VARIABLE-LIST = (49) ...
     =REPORT-BLOCK VARIABLE-TYPE = SSFZ3MID
SY_6
                        VARIABLE-LIST = (49) ...
     =REPORT-BLOCK VARIABLE-TYPE = SSZF4MID
SY_7
                        VARIABLE-LIST = (49) ...
     =REPORT-BLOCK VARIABLE-TYPE = 0SMCAHUSZR
SY 8
                        VARIABLE-LIST = (49) ...
        =REPORT-BLOCK VARIABLE-TYPE = 1EXTPER
Z 1
                        VARIABLE-LIST = (7,6) ...
Z_2 = REPORT-BLOCK VARIABLE-TYPE = 1INTPER
                        VARIABLE-LIST = (7,6) ...
Z_3 =REPORT-BLOCK VARIABLE-TYPE = 2EXTPER
                        VARIABLE-LIST = (7,6) .:
       =REPORT-BLOCK VARIABLE-TYPE = 2INTPER
Z_4
                        VARIABLE-LIST = (7,6) ...
       =REPORT-BLOCK VARIABLE-TYPE = 3EXTPER
                        VARIABLE-LIST = (7,6) ...
       =REPORT-BLOCK VARIABLE-TYPE = 3INTPER
                        VARIABLE-LIST = (7,6) ...
       =REPORT-BLOCK VARIABLE-TYPE = 4EXTPER
                        VARIABLE-LIST = (7,6) ...
        =REPORT-BLOCK VARIABLE-TYPE = 4INTPER
Z_8
                        VARIABLE-LIST = (7,6) ...
      =REPORT-BLOCK VARIABLE-TYPE = 2MIDL
Z 9
                        VARIABLE-LIST = (7,6) ...
     =REPORT-BLOCK VARIABLE-TYPE = 3MIDL
Z_{10}
                        VARIABLE-LIST = (7,6) ...
     =REPORT-BLOCK VARIABLE-TYPE = 4MIDL
Z_11
                        VARIABLE-LIST = (7,6) ...
     =REPORT-BLOCK VARIABLE-TYPE = 0INTEXTPER
Z 12
                        VARIABLE-LIST = (7,6) ...
     = HOURLY-REPORT REPORT-SCHEDULE = ON PKY
RS_1
                        REPORT-BLOCK = (SY_1, SY_2, SY_3, SY_4)
RS_2
       = HOURLY-REPORT REPORT-SCHEDULE = ON_PKY
                        REPORT-BLOCK = (SY_5, SY_6, SY_7, SY_8)
     = HOURLY-REPORT
                           REPORT-SCHEDULE = ON PKY
                        REPORT-BLOCK = (Z 1, Z 2)
         = HOURLY-REPORT
                           REPORT-SCHEDULE = ON PKY
                        REPORT-BLOCK = (Z 3, Z 4)
       = HOURLY-REPORT REPORT-SCHEDULE = ON PKY
                        REPORT-BLOCK = (Z_5, Z_6)
      = HOURLY-REPORT REPORT-SCHEDULE = ON PKY
RS 6
```

```
REPORT-BLOCK = (Z_7,Z_8)
```

RS_7 = HOURLY-REPORT REPORT-SCHEDULE = ON_PKY REPORT-BLOCK = (Z_9,Z_10)

> = HOURLY-REPORT REPORT-SCHEDULE = ON_PKY REPORT-BLOCK = (Z_11,Z_12)

END .. COMPUTE SYSTEMS ..

INPUT PLANT ..

\$ E Z - D O E P L A N T S I N P U T \$ \$ -----\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 * ENTECH ENGINEERING *

LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*

LINE-3 * READING, PA 19603 *

LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *

LINE-5 *FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 *

ABORT ERRORS .. DIAGNOSTIC WARNINGS ..

T-REPORT SUMMARY=(PS-C, PS-D, PS-H, BEPS)

REPORT-FREQUENCY = MONTHLY ...

\$ SCHEDULES

D24FULON =DAY-SCHEDULE (1,24) (1.) ..

D24FULOF =DAY-SCHEDULE (1,24) (0.) ...

OFF PKDP =DAY-SCHEDULE (1,7) (1.)

(8,19) (0.)

(20,24) (1.) ...

ON PKDP =DAY-SCHEDULE (1,7) (0.)

(8,19) (1.)

(20,24) (0.) ...

W24FULON7D =WEEK-SCHEDULE (ALL) D24FULON ..

W24FULOF7D =WEEK-SCHEDULE (ALL) D24FULOF ...

OFF_PKWP =WEEK-SCHEDULE (WD) OFF_PKDP

(WEH) D24FULON ..

OWNER ON STATE OF STA

```
Y24FULON7D =SCHEDULE THRU DEC 31 W24FULON7D ...
$ YRSCH HEATING SEAS1
YHTSEAS1 =SCHEDULE THRU MAY 15 W24FULON7D
                    THRU OCT 15 W24FULOF7D
                    THRU DEC 31 W24FULON7D
$ YRSCH COOL SEAS1
YCLSEAS1 =SCHEDULE THRU MAY 15 W24FULOF7D
                    THRU OCT 15 W24FULON7D
                    THRU DEC 31 W24FULOF7D ...
TEST 1 =SCHEDULE THRU AUG 17 W24FULOF7D
                    THRU AUG 19 W24FULON7D
                    THRU DEC 31 W24FULOF7D ...
OFF PKYP =SCHEDULE THRU DEC 31 OFF PKWP ...
ON PKYP =SCHEDULE THRU DEC 31 ON PKWP ...
                   $ EQUIPMENT DESCRIPTION
HWBLR1 =PLANT-EQUIPMENT TYPE = HW-BOILER
                     SIZE = -999. ..
HCCC-CHILR = PLANT-EQUIPMENT TYPE = HERM-CENT-CHLR
                     SIZE = 7.8 ..
   COOLTWR =PLANT-EQUIPMENT TYPE = COOLING-TWR
                     SIZE = -999. ..
                    BOILER-CONTROL = STANDBY HW-BOILER-HIR = 1.2
PLANT-PARAMETERS
                     TWR-WTR-SET-POINT = 85. TWR-PUMP-HEAD = 50.
                     TWR-CELL-MAX-GPM = 1.0 TWR-FAN-OFF-CFM = 0.1
                     CHILLER-CONTROL = STANDBY CHILL-WTR-T = 55.
                     CCIRC-HEAD = 100.0 CCIRC-DESIGN-T-DROP = 5.0
                     HCIRC-HEAD = 100.0 HCIRC-DESIGN-T-DROP = 25.0
                   RESOURCE = FUEL-OIL ..
ENERGY-RESOURCE
                    RESOURCE = ELECTRICITY ...
ENERGY-RESOURCE
                    $ HOURLY REPORT DESCRIPTION
         =REPORT-BLOCK VARIABLE-TYPE = HERM-CENT-CHLR
P 1
                        VARIABLE-LIST = (1,3,12,13) ...
P 2 = REPORT-BLOCK VARIABLE-TYPE = COOLING-TWR
                        VARIABLE-LIST = (8,10,20,21) ...
        =REPORT-BLOCK VARIABLE-TYPE = HW-BOILER
                        VARIABLE-LIST = (1,3,4,7) ...
        = HOURLY-REPORT REPORT-SCHEDULE = ON_PKYP
                        REPORT-BLOCK = (P 1, P 2)
      = HOURLY-REPORT REPORT-SCHEDULE = ON PKYP
```

REPORT-BLOCK = (P 3)

END .. COMPUTE PLANT ..

TOT ECONOMICS ...

\$ GENERAL PROJECT DATA

TITLE LINE-1 * ENTECH ENGINEERING *

LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*

LINE-3 * READING, PA 19603 *

LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *

LINE-5 *FTMOAC0 - SIM MCA H20 ONLY W/OA SCHD1 * ..

ABORT ERRORS ..

DIAGNOSTIC WARNINGS ...

ECONOMICS-REPORT VERIFICATION=(EV-B)

SUMMARY=(ES-D, ES-E) ...

S SCHEDULES

D24OFPKKWH =DAY-CHARGE-SCH (1,24) (4OFPKKWH) ..

GDEMKWH =DAY-CHARGE-SCH (1,7) (40FPKKWH)

(8,19) (40FPKKWH, EONPKDMHTG)

(20,24) (4OFPKKWH) ..

DCLGDEMKWH =DAY-CHARGE-SCH (1,7) (40FPKKWH)

(8,19) (EONPKKWH, EONPKDMCL)

(20,24) (40FPKKWH) ...

D24OFPKWH =DAY-CHARGE-SCH (1,24) (4OFPKKWH) ...

WHTG =WEEK-SCHEDULE (WD) DHTGDEMKWH

(WEH) D24OFPKWH ..

WCLG =WEEK-SCHEDULE (WD) DCLGDEMKWH

(WEH) D24OFPKWH ..

\$ YRSCH ELEC1

YELEC1 =SCHEDULE THRU MAY 31 WHTG

THRU SEP 30 WCLG

THRU DEC 31 WHTG

\$ CHARGE ASSIGNMENT

4OFPKKWH =C-A RESOURCE = ELECTRICITY TYPE = ENERGY

UNIFORM-CHARGE = 0.0719 ..

EONPKKWH = C-A RESOURCE = ELECTRICITY TYPE = ENERGY

UNIFORM-CHARGE = 0.0801 ..

EONPKDMHTG =C-A

RESOURCE = ELECTRICITY TYPE = DEMAND

UNIFORM-CHARGE = 8.57 ..

E-PKDMCL =C-A

RESOURCE = ELECTRICITY TYPE = DEMAND

UNIFORM-CHARGE = 9.47 ..

\$ ENERGY COST

ENERGY-COST

RESOURCE = FUEL-OIL UNIT = 138690.

UNIFORM-COST = .59

ENERGY-COST

RESOURCE = ELECTRICITY UNIT = 3413.

ASSIGN-SCHEDULE = YELEC1 ...

END ..

COMPUTE ECONOMICS ..

STOP ..

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 6/26/1996 14:55:35 LDL RUN 1

WEATHER FILE- NEWARK, NJ

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- LS-F BUILDING MONTHLY LOAD COMPONENTS IN MBTU

(UNI	IS=MBTU)	WALLS	ROOFS	INT SUR	UND SUR	INFIL	GL CON	GL SOL	OCCUP	LIGHTS	EQUIP	SOURCE	TOTAL
	HEATNG	-272.143	-235.737	0.000	-2.939	-634.744	-273.952	90.257	21.964	302.375	139.833	0.000	-865.087
JAN	SEN CL	-88.805	-84.339	0.000	-6.694	-52.599	-83.527	46.116	44.024	555.107	240.910	0.000	570.193
	LAT CL					0.000			36.621	·	0.000	0.000	36.621
	HEATNG	-218.424	-191.017	0.000	-2.457	-533.922	-224.334	102.075	16.750	234.412	112.097	0.000	-704.819
FEB	SEN CL	-87.312	-75.890	0.000	-7.318	-69.480	-85.655	61.199	43.069	543.078	232.517	0.000	554.207
	LAT CL					0.000			35.840	· 	0.000	0.000	35.840
		-179.153	-144.817	0.000		-473.362	-188.526	110.535	15.468	218.676	98.211	0.000	-543.864
MAR	SEN CL	-92.850	-85.440	0.000	-10.027	-104.621	-98.050	109.224	55.576	698.190	296.472	0.000	768.475
	LAT CL					1.353			46.222		0.000	0.000	47.574
	HEATNG	-85.349	-65.463	0.000		-202.330	-90.633	66.229	7.398	108.121	49.780	0.000	-212.315
APR	SEN CL	-71.480	-54.761	0.000	-9.954	-97.012	-92.076	181.122	58.424	745.584	324.314	0.000	984.160
	LAI CL					10.991		-	47.597		0.000	0.000	58.589
	HEATNG	-42.064	-31.012	0.000	0.000	-93.948	-44.586	37.149	3.678	56.766	27.623	0.000	-86.394
MAY	SEN CL	-36.767	-13.580	0.000	-8.090	-63.422	-68.791	252.767	62.335	801.088	353.208	0.000	1278.748
	LAT CL		-			45.072			50.670		0.000	0.000	95.742
	HEATNG	-5.192	-4.771	0.000	0.000	-8.496	-5.522	4.896	0.530	8.609	4.277	0.000	-5.668
JUN	SEN CL	12.210	42.748	0.000	-5.639	17.368	-29.364	266.725	67.590	871.311	375.945	0.000	1618.894
	LAT CL					131.621			54.193		0.000	0.000	185.814
	HEATNG	-0.957	-0.927	0.000	0.000	-2.463	-1.053	0.941	0.137	2.316	1.200	0.000	-0.807
JUL	SEN CL	37.004	64.735	0.000	-3.864	44.720	-9.099	278.968	63.686	830.929	373.892	0.000	1680.972
	LAT CL					174.480			50.873		0.000	0.000	225.353
	HEATNG	-4.534	-4.023	0.000	0.000	-5.615	-4.698	2.765	0.388	6.648	3.810	0.000	-5.259
AUG	SEN CL	18.893	43.115	0.000	-2.618	25.941	-22.592	255.873	70.525	908.241	390.393		1687.771
	LAT CL					168.708			56.571 		0.000	0.000	225.278
	HEATNG	-13.768	-12.033	0.000	0:000	-22.322	-14.263	10.316	1.427	21.523	10.213	0.000	-18.907
SEP	SEN CL	-29.372	-8.509	0.000	-2.428	-46.479	-59.584	216.242	64.243	829.882	363.324	0.000	1327.318
	LAT CL					114.185			51.602		0.000		165.787
	HEATNG						-67.644						-133.032
OCT	SEN CL	-69.273	-60.550	0.000	-3.516	-87.576	-88.728	157.492	58.247	747.498	333.778	0.000	987.371
	LAT CL					19.721			47.506		0.000		67.226
	HEATNG		-119.464				-147.606				79.471		-386.243
NOA	SEN CL	-83.307	-80.952	0.000	-5.148	-74.613	-84.796	69.595		651.692	287.342	0.000	731.238
	LAT CL	~~~~~~		. 		17.222			42.566		0.000		59.788
	HEATNG						-243.249						-771.295
D	SEN CL	-85.360	-86.599	0.000	-6.050		-81.374	45.636		573.762	252.411	0.000	599.703
	LAT CL					0.000			37.607		0.000		37.607
	HEATNG	-1270.234	-1062.250	0.000	-8.032	-2997.727	-1306.058	605.806	105.839	1502.228	696.708	0.000 -	-3733.721

TOT SEN CL -576.415 -400.023 0.000 -71.346 -565.898 -803.641 1940.944 684.535 8755.893 3824.610 0.000 12788.659
LAT CL 563.358 557.718 0.000 0.000 1241.076

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHDl REPORT- SV-A SYSTEM DESIGN PARAMETERS 1SMCAHUSZR WEATHER FILE- NEWARK, NJ ______ SYSTEM ALTITUDE NAME MULTIPLIER 1SMCAHUSZR 1.000 RETURN OUTSIDE COOLING HEATING COOLING HEATING SUPPLY FAN ELEC DELTA-T FAN ELEC DELTA-T AIR CAPACITY SENSIBLE CAPACITY EIR EIR (KW) (F) (CFM) (KW) (CFM) RATIO (KBTU/HR) (SHR) (KBTU/HR) (BTU/BTU) (BTU/BTU) 0.000 0.0 0.150 1162.387 0.690 -800.000 30680. 30.066 2.4 0. 0.00 0.00 MINIMUM OUTSIDE COOLING EXTRACTION HEATING ADDITION ZONE SUPPLY EXHAUST FAN FLOW AIR CAPACITY SENSIBLE RATE CAPACITY FLOW (KBTU/HR) (SHR) (KBTU/HR) (KBTU/HR) MULTIPLIER NAME FLOW FLOW (KW) RATIO

0. 0.000 1.000 3888. 0.00 0.00

0.000

DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1

559.87 0.00 -488.64

1.0

1.000 714. 0.00 0.00 102.82 0.00 -89.73

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

ENTECH ENGINEERING

25920.

4760. 0.

1EXTPER

1INTPER

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 2SPERFC REPORT- SV-A SYSTEM DESIGN PARAMETERS WEATHER FILE- NEWARK, NJ ALTITUDE SYSTEM NAME MULTIPLIER 2SPERFC 1.000 OUTSIDE COOLING SUPPLY RETURN HEATING COOLING HEATING FAN FAN ELEC DELTA-T ELEC DELTA-T AIR CAPACITY SENSIBLE CAPACITY EIR EIR

(KW) (F) RATIO (KBTU/HR) (SHR) (KBTU/HR) (BTU/BTU) (BTU/BTU)

(KW) (F)

(CFM)

(CFM)

49470.	0.000	0.2	0.	0.000	0.0	0.000	0.000	0.000	0.000	0.00	0.00	
zon na m		SUPPLY FLOW	EXHAUST FLOW	FAN (KW)	MINIMUM FLOW RATIO	OUTSIDE AIR FLOW	COOLING CAPACITY (KBTU/HR)	I SENSIBLE (SHR)	EXTRACTION RATE (KBTU/HR)	HEATING CAPACITY (KBTU/HR)	ADDITION RATE (KBTU/HR)	
2EXTPER		27710.	0.	1.940	1.000	0.	954.80	0.70	598.41	-1422.16	-1428.11	1.0
2INTPER		21760.	0.	1.523	1.000	0.	756.73	0.70	469.97	-1116.79	-1121.46	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- SV-A SYSTEM DESIGN PARAMETERS 3SPERFC WEATHER FILE- NEWARK, NJ

SYSTEM ALTITUDE

NAME MULTIPLIER

3SPERFC

1.000

SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING		
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR		
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)		
49470.	0.000	0.2	0.	0.000	0.0	0.000	0.000	0.000	0.000	0.00	0.00		
					MINIMUM	OUTSIDE	COOLING	I	EXTRACTION	HEATING	ADDITION		
ZON	E	SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE		
NAM	E	FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER	
3EXTPER		27710.	0.	1.940	1.000	0.	954.80	0.70	598.44	-1422.16	-1428.11	1.0	
3INTPER		21760.	0.	1.523	1.000	0.	756.73	0.70	469.97	-1116.79	-1121.46	1.0	

REPORT- SV-A SYSTEM DESIGN PARAMETERS ______

4SPERFC

WEATHER FILE- NEWARK, NJ

SYSTEM	ALTITUDE
NAME	MULTIPLIER

4SPERFC

1.000

SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING	
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR	
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	•
58060.	0.000	0.2	0.	0.000	0.0	0.000	0.000	0.000	0.000	0.00	0.00	
					MINIMUM	OUTSIDE	COOLING	I	EXTRACTION	HEATING	ADDITION	
ZONE		SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE	
NAME		FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER
4EXTPER		32540.	0.	2.278	1.000	0.	1112.80	0.70	702.80	-1670.05	-1677.03	1.0
4INTPER		25520.	0.	1.786	1.000	0.	873.11	0.70	551.02	-1309.76	-1315.24	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- SV-A SYSTEM DESIGN PARAMETERS SSZF2MID WEATHER FILE- NEWARK, NJ _____ SYSTEM ALTITUDE MULTIPLIER NAME SSZF2MID 1.000 OUTSIDE COOLING RETURN HEATING COOLING HEATING SUPPLY ELEC DELTA-T AIR CAPACITY SENSIBLE CAPACITY ELEC DELTA-T FAN EIR FAN (KW) (F) (KW) (F) (CFM) RATIO (KBTU/HR) (SHR) (KBTU/HR) (BTU/BTU) (BTU/BTU) (CFM) 24400. 23.912 2.4 0. 0.000 0.0 0.150 925.890 0.690 -1464.441 0.00 0.00 MINIMUM OUTSIDE COOLING EXTRACTION HEATING ADDITION FAN AIR CAPACITY SENSIBLE RATE CAPACITY ZONE SUPPLY EXHAUST FLOW

FLOW (KBTU/HR) (SHR) (KBTU/HR) (KBTU/HR) (KBTU/HR) MULTIPLIER

1.0

0.000 1.000 3660. 0.00 0.00 527.04 0.00 -1264.90

(KW)

FLOW FLOW

24400. 0.

NAME

2MIDL

RATIO

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- SV-A SYSTEM DESIGN PARAMETERS SSFZ3MID WEATHER FILE- NEWARK, NJ SYSTEM ALTITUDE NAME MULTIPLIER SSFZ3MID 1.000 SUPPLY RETURN OUTSIDE COOLING HEATING COOLING HEATING FAN FAN ELEC DELTA-T ELEC DELTA-T AIR CAPACITY SENSIBLE CAPACITY (KW) (F) (F) (CFM) (KW) RATIO (KBTU/HR) (SHR) (KBTU/HR) (BTU/BTU) (BTU/BTU) (CFM) 29850. 29.253 2.4 0. 0.000 0.0 0.150 1132.830 0.690 -1791.540 0.00 0.00

SUPPLY EXHAUST

FLOW

29850. 0. 0.000

ZONE

NAME

3MIDL

FAN

(KW)

FLOW

RATIO

1.000

MINIMUM OUTSIDE COOLING EXTRACTION HEATING ADDITION

4478. 0.00 0.00 644.76 0.00 -1547.42

RATE CAPACITY

(SHR) (KBTU/HR) (KBTU/HR) (KBTU/HR) MULTIPLIER

1.0

AIR CAPACITY SENSIBLE

FLOW (KBTU/HR)

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- SV-A SYSTEM DESIGN PARAMETERS SSZF4MID WEATHER FILE- NEWARK, NJ

SYSTEM ALTITUDE
NAME MULTIPLIER

SSZF4MID

1.000

SUPPLY FAN (CFM)	ELEC (KW)	DELTA-T	RETURN FAN (CFM)	ELEC	DELTA-T	OUTSIDE AIR RATIO	COOLING CAPACITY (KBTU/HR)	SENSIBLE	HEATING CAPACITY (KBTU/HR)	COOLING EIR (BTU/BTU)	HEATING EIR (BTU/BTU)	
30070.	29.469	2.4	0.	0.000	0.0	0.150	1135.188	0.691	-1804.744	0.00	0.00	
ZON NAM		SUPPLY FLOW	EXHAUST FLOW	FAN (KW)	MINIMUM FLOW RATIO	OUTSIDE AIR FLOW	COOLING CAPACITY (KBTU/HR)	I SENSIBLE (SHR)	EXTRACTION RATE (KBTU/HR)	HEATING CAPACITY (KBTU/HR)	RATE	MULTIPLIER
4MIDL		30070.	0.	0.000	1.000	4511.	0.00	0.00	649.51	0.00	-1558.83	1.0

ENTECH ENGINEERING DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1 EZDOE - ELITE SOFTWARE DEVELOPMENT INC READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- SV-A SYSTEM DESIGN PARAMETERS 0SMCAHUSZR WEATHER FILE- NEWARK, NJ ALTITUDE SYSTEM NAME MULTIPLIER OSMCAHUSZR 1.000 OUTSIDE COOLING SUPPLY RETURN HEATING COOLING HEATING FAN ELEC DELTA-T FAN ELEC DELTA-T AIR CAPACITY SENSIBLE CAPACITY EIR (CFM) (KW) (CFM) (KW) (F) RATIO (KBTU/HR) (SHR) (KBTU/HR) (BTU/BTU) (BTU/BTU) (F) 0.0 0.150 675.350 0.691 -1075.524 17920. 17.562 2.4 0. 0.000 0.00 0.00

MINIMUM OUTSIDE COOLING EXTRACTION HEATING ADDITION SUPPLY EXHAUST FAN AIR CAPACITY SENSIBLE RATE CAPACITY RATE (KW) FLOW RATIO NAME FLOW FLOW (KBTU/HR) (SHR) (KBTU/HR) (KBTU/HR) (KBTU/HR) MULTIPLIER 0.000 1.000 2688. 0.00 OINTEXTPER 17920. 0. 0.00 387.07 0.00 -928.97 1.0

DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1

REPORT- SS-D PLANT MONTHLY LOADS SUMMARY FOR

DEFAULT-PLANT

		c o	ori	ng -				нЕ	АТІ	N G		E L	B C
					MAXIMUM						MUMIXAM	ELEC~	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TI	ME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF N	XAJ	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000				0.000	-806.201	5	20	15.F	12.F	-3786.090	417143.	1420.651
FEB	0.00000				0.000	-635.981	20	3	10.F	7.F	-4087.203	376069.	1420.651
MAR	0.00000				0.000	-432.909	5	1	29.F	24.F	-2218.542	439182.	1420.651
APR	0.00000				0.000	-126.976	11	6	35.F	35.F	-1706.639	419518.	1420.651
MAY	485.67633	26 15	86.F	71.F	6298.961	-12.614	4	2	40.F	35.F	-279.126	433551.	1420.651
JUN	1665.38916	13 15	98.F	74.F	7296.639	0.000					0.000	433468.	1420.651
JUL	1847.39661	13 14	90.F	73.F	6964.448	0.000					0.000	419270.	1420.651
Ac	1843.29443	18 15	94.F	74.F	7204.293	0.000					0.000	450948.	1420.651
SEP	1157.01685	20 14	83.F	72.F	6181.995	0.000					0.000	420016.	1420.651
OCT	205.22958	14 15	77.F	62.F	4954.120	-22.207	26	6	43.F	40.F	-776.548	412488.	1420.651
NOA	0.00000				0.000	-288.533	25	6	38.F	37.F	-2276.397	401453.	1420.651
DEC	0.00000				0.000	-702.332	26	7	25.F	24.F	-2637.494	416299.	1420.651
TOTAL	7204.001					-3027.752						5039503.	
MAX					7296.639						-4087.203		1420.651

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

1SMCAHUSZR

•		c o	OLI	n G	. 		н	EATI	и G -		E L	E C
					MUMIXAM					MUMIXAM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY (KWH)	LOAD (KW)
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	ТЕМР	ILMP	(KBTU/HR)	(AMI)	(RW)
JAN	0.00000				0.000	-0.850	3 6	31.F	28.F	-197.626	56271.	203.731
FEB	0.00000				0.000	-0.268	7 7	15.F	13.F	-29.149	50885.	203.731
MAR	0.00000				0.000	-0.012	25 6	28.F	25.F	-7.991	59973.	203.731
APR	0.00000				0.000	0.000				0.000	58205.	203.731
MAY	53.54640	26 14	83.F	71.F	879.738	-0.057	10 17	87.F	68.F	-9.676	60931.	203.731
JUN	206.00967	13 13	95.F	75.F	988.951	0.000				0.000	60477.	203.731
JOL	227.73489	19 14		74.F	939.398	0.000				0.000	58178.	203.731
AÜ	237.14639	18 16		77.F	990.470	0.000				0.000	62318.	203.731
SEP	142.15143	20 12		75.F	939.177	0.000				0.000	57874.	
OCT	18.88570	14 14	75.F	61.F	705.816	0.000				0.000	56284.	203.731
NOV	0.00000				0.000	0.000				0.000	54430.	203.731
DEC	0.00000				0.000	-0.210	8 6	19.F	17.F	-29.654	56301.	203.731
TOTAL	885.475					-1.398					692103.	
MAX					990.470					-197.626		203.731

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

2SPERFC

		C O	OLI	N G -		· ·		нЕ	АТІ	N G		E L	E C
					MUMIXAM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	T	ME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF N	IAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KM)
JAN	0.00000				0.000	-204.373	5	20	15.F	12.F	-1172.794	49885.	176.678
FEB	0.00000				0.000	-161.799	20	3	10.F	7.F	-1115.597	45103.	176.678
MAR	0.00000				0.000	-108.891	5	1	29.F	24.F	-669.678	52738.	176.678
APR	0.00000				0.000	-31.192	11	4	37.F	36.F	-479.441	49242.	176.678
MAY	86.59464	16 2	70.F	64.F	1289.167	-2.907	2	22	50.F	39.F	-62.214	49885.	176.678
JUN	246.58362	13 15	98.F	74.F	999.814	0.000					0.000	50668.	176.678
JUL	267.83667	13 14	90.F	73.F	949.750	0.000					0.000	48459.	176.678
A	258.52383	18 15	94.F	74.F	1005.357	0.000					0.000	52738.	176.678
SEP	180.10347	7 15	82.F	64.F	796.730	0.000					0.000	49242.	176.678
OCT	45.34973	14 15	77.F	62.F	663.986	-3.223	26	6	43.F	40.F	-155.664	48459.	176.678
NOV	0.00000				0.000	-67.506	25	6	38.F	37.F	-630.040	47816.	176.678
DEC	0.00000				0.000	-182.107	26	7	25.F	24.F	-686.903	49885.	176.678
TOTAL	1084.992					-761.998						594129.	
MAX					1289.167						-1172.794		176.678

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

3SPERFC

			СО	o L I	N G				нЕ	ATI	NG		E L	E C
						MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	Т	IME	DRY-	WET-	COOLING	HEATING	I	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
								_	•				40005	175 670
JAN	0.00000					0.000	-204.383	5	20	15.F	12.F	-1172.817	49885.	176.678
FEB	0.00000					0.000	-161.807	20	3	10.F	7.F	-1115.619	45103.	176.678
MAR	0.00000					0.000	-108.895	5	1	29.F	24.F	-669.697	52738.	176.678
APR	0.00000					0.000	-31.193	11	4	37.F	36.F	-479.449	49242.	176.678
MAY	86.59817	16	2	70.F	64.F	1289.196	-2.907	2	22	50.F	39.F	-62.215	49885.	176.678
										•				
JUN	246.59200	13	15	98.F	74.F	999.837	0.000					0.000	50668.	176.678
JUL.	267.84625	13	14	90.F	73.F	949.770	0.000					0.000	48459.	176.678
Abe	258.53091	18	15	94.F	74.F	1005.376	0.000					0.000	52738.	176.678
SEP	180.10663	7	15	82.F	64.F	796.743	0.000					0.000	49242.	176.678
OCT	45.34949	14	15	77.F	62.F	663.989	-3.223	26	6	43.F	40.F	-155.696	48459.	176.678
VON	0.00000					0.000	-67.511	25	6	38.F	37.F	-630.055	47816.	176.678
DEC	0.00000					0.000	-182.117	26	7	25.F	24.F	-686.924	49885.	176.678
TOTAL	1085.023						-762.036						594129.	
MAX						1289.196						-1172.817		176.678

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 4SPERFC WEATHER FILE- NEWARK, NJ

		NG				нЕ	АТІ	NG		E L	E C			
						MAXIMUM						MUMIXAM	ELEC-	MAXIMUM
	COOLING	T	IME	DRY-	WET-	COOLING	HEATING	Т	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF N	XAN	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000					0.000	-345.504	5	20	15.F	12.F	-1440.479	50332.	177.279
FEB	0.00000					0.000	-277.102	20	3	10.F	7.F	-1388.293	45508.	177.279
MAR	0.00000					0.000	-204.234	5	1	29.F	24.F	-879.167	53185.	177.279
APR	0.00000					0.000	-63.949	9	4	32.F	27.F	-725.252	49675.	177.279
MAY	79.56396	26	15	86.F	71.F	939.903	-6.514	4	4	39.F	35.F	-231.386	50332.	177.279
JUN	261.59937	13	15	98.F	74.F	1180.491	0.000					0.000	51101.	177.279
JUL	294.83423	13	14	90.F	73.F	1084.089	0.000					0.000	48906.	177.279
AUG	274.80002	18	15	94.F	74.F	1154.626	0.000					0.000	53185.	177.279
SEP	170.26332	7	14	82.F	64.F	896.833	0.000					0.000	49675.	177.279
OCT	30.41889	14	15	77.F	62.F	647.320	-15.717	25	6	41.F	36.F	-500.299	48906.	177.279
NOV	0.00000					0.000	-145.622	25	6	38.F	37.F	-792.909	48249.	177.279
DEC	0.00000					0.000	-307.718	26	7	25.F	24.F	-906.660	50332.	177.279
TOTAL	1111.481						-1366.360						599332.	
MAX						1180.491						-1440.479		177.279

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR SSZF2MID

		C O	OLI	N G -			н	EATI	N G		E L	E C
					MAXIMUM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000				0.000	-0.140	17 4	16.F	14.F	-22.945	53835.	184.421
FEB	0.00000				0.000	-0.346	20 4	9.F	7.F	-28.400	48580.	184.421
MAR	0.00000				0.000	0.000				0.000	57080.	184.421
APR	0.00000				0.000	0.000				0.000	54998.	184.421
MAY	48.87048	26 14	83.F	71.F	722.120	-0.041	10 17	87.F	68.F	-7.125	56681.	184.421
JUN	178.64218	13 13	95.F	75.F	790.296	0.000				0.000	55556.	184.421
JUL	194.48663	19 14	85.F	74.F	767.954	0.000				0.000	53755.	184.421
AÜG	204.10178	18 16	91.F	77.F	795.853	0.000				0.000	57964.	184.421
SEP	130.62488	20 12	80.F	75.F	775.442	0.000				0.000	53994.	184.421
OCT	20.88273	14 15	77.F	62.F	600.384	0.000				0.000	54018.	184.421
NOV	0.00000				0.000	0.000				0.000	52575.	184.421
DEC	0.00000				0.000	-0.007	27 5	21.F	19.F	-7.429	53787.	184.421
TOTAL	777.609					-0.535					652815.	
MAX					795.853					-28.400		184.421

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR SSFZ3MID WEATHER FILE- NEWARK, NJ

9	·	c o			I	HEAT	I :	NG-		E L	E C		
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIM	ME DR	Y-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF M	AX BU	LВ	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY I	ir te	MP	TEMP	(KBTU/HR)	(KWH)	(KW)
NAU	0.00000				0.000	-0.122	17	5 16	. F	14.F	-26.723	66437.	226.834
FEB	0.00000				0.000	-0.417	20	4 9	.F	7.F	-34.467	59946.	226.834
MAR	0.00000				0.000	0.000					0.000	70397.	226.834
APR	0.00000				0.000	0.000					0.000	67767.	226.834
MAY	60.04546	26 14	83.F	71.F	884.621	-0.050	10	L7 87	. F	68.F	-8.944	69713.	226.834
מטע	219.02705	13 13	95.F	75.F	967.301	0.000					0.000	68343.	226.834
JUL	238.13353	19 14	85.F	74.F	940.303	0.000					0.000	66095.	226.834
AUG	250.13724	18 16	91.F	77.F	973.837	0.000					0.000	71274.	226.834
SEP	160.69432	20 12	80.F	75.F	950.956	0.000					0.000	66422.	226.834
oct	25.98936	14 15	77.F	62.F	735.752	0.000					0.000	66475.	226.834
NOV	0.00000				0.000	0.000					0.000	64822.	226.834
DEC	0.00000				0.000	0.000					0.000	66378.	226.834
TOTAL	954.027					-0.589						804023.	
MAX					973.837						-34.467		226.834

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

SSZF4MID

						E L E C								
						MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TI	ME	DRY-	WET~	COOLING	HEATING	т	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF M	ΙΑΧ	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000					0.000	-46.775	10	6	19 F	17.F	-440.053	52613.	174.320
							2011.2		•	43.1		440.033	32013.	1/4.320
FEB	0.00000					0.000	-32.560	20	7	8.F	6.F	-516.131	46702.	174.320
MAR	0.00000					0.000	-10.812	6	7	34.F	31.F	-278.698	53734.	174.320
APR	0.00000					0.000	-0.642	11	6	35.F	35.F	-176.844	51724.	174.320
MAY	42.36839	26	14	83.F	71.F	761.691	-0.102	3	6	39.F	33.F	-18.083	55324.	174.320
JUN	187.35571	13		95.F		906.793	0.000					0.000	56277.	174.320
JUL	217.72856	29		88.F		856.526	0.000					0.000	54660.	174.320
A	218.72540	17		86.F		869.120	0.000					0.000	58390.	174.320
SEP	113.27917	20	12	80.F	75.F	771.033	0.000					0.000	54199.	174.320
OCT	9.77956	14	14	75.F	61.F	572.149	-0.044	25	6	41.F	36.F	-15.953	50534.	174.320
NOV	0.00000					0.000	-7.841	14	6	31.F	27.F	-296.989	48790.	174.320
DEC	0.00000					0.000	-29.089	27	5	21.F	19.F	-399.486	51670.	174.320
TOTAL	789.237						-127.865						634615.	
MAX						906.793						-516.131		174.320

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 0SMCAHUSZR WEATHER FILE- NEWARK, NJ

		c o	o r i	NG			H E		E L E C			
					MAXIMUM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
HTMOM	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000				0.000	-4.054	10 6	19.F	17.F	-221.000	37887.	100.709
FEB	0.00000				0.000	-1.681	7 6	14.F	12.F	-235.263	34243.	100.709
MAR	0.00000				0.000	-0.065	24 6	30.F	26.F	-15.548	39339.	100.709
APR	0.00000				0.000	0.000				0.000	38667.	100.709
MAY	28.08884	26 14	83.F	71.F	489.535	-0.035	10 17	87.F	68.F	-5.218	40802.	100.709
JUN	119.57966	13 13	95.F	75.F	569.703	0.000				0.000	40376.	100.709
JUL	138.79631	29 13		73.F	532.865	0.000				0.000	40760.	100.709
AÚ	141.32867	18 16	91.F	77.F	562.700	0.000				0.000	42342.	100.709
SEP	79.79346	20 12	80.F	75.F	515.543	0.000				0.000	39369.	100.709
OCT	8.57403	14 14	75.F	61.F	383.748	0.000				0.000	39355.	100.709
NOV	0.00000				0.000	-0.053	9 6	29.F	25.F	-16.791	36957.	100.709
DEC	0.00000				0.000	-1.083	27 6	21.F	19.F	-137.388	38062.	100.709

TOTAL	516.161					-6.972					468189.	
MAX					569.703					-235.263		100.709

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL REPORT- PV-A EQUIPMENT SIZES

DOE-2.1D 6/26/1996 14:55:35 PDL RUN 1

WEATHER FILE- NEWARK, NJ

	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	
EQUIPMENT	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	
	(MBTU/H) AVAII	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	
HW-BOILER	4.101 1 1						
HERM-CENT-CHLR	7.800 1 1						
COOLING-TWR	2.379 4 4						

ENTECH ENGINEERING

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 6/26/1996 14:55:35 PDL RUN 1

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- PS-C EQUIPMENT PART LOAD OPERATION

WEATHER FILE- NEWARK, NJ

												TOTAL	ANNUAL	FALSE	ELEC	THERMAL
			Н	OURS A	r perc	ENT PA	RT LOAI	D RAT	IO			HOURS	LOAD	LOAD	USED	USED
EQUIPMENT													(MBTU)	(MBTU)	(MBTU)	(MBTU)
	0 10	20	30	40	50	60	70	8	0 90	10	0 - 110+					
HW-BOILER	2827	616	634	478	311	139	41	28	9	4	1	5088	3096.9	0.0	202.4	4504.8
	2827	616	634	478	311	139	41	28	9	4	1					
HERM-CENT-CHLR	1286	825	408	207	244	352	266	81	3	0	0	3672	8366.2	0.0	1972.7	0.0
	1286	825	408	207	244	352	266	81	3	0	0					
COOLING-TWR	1660	651	227	116	89	77	68	102	125	115	442	3672	10338.9	0.0	807.7	0.0
	1660	651	227	116	89	77	68	102	125	115	442					

HOT LOOP CIRCULATION PUMP ELECTRICAL USE = 154.2 MBTU COLD LOOP CIRCULATION PUMP ELECTRICAL USE = 993.6 MBTU

NOTES TO TABLE

- 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

REPORT- PS-D PLANT LOADS SATISFIED

WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HW-BOILER	3096.9	100.0

LOAD SATISFIED	3096.9	100.0
		100.0
TOTAL LOAD ON PLANT	3096.9	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-CENT-CHLR	8366.2	100.0
	222222222	*****
LOAD SATISFIED	8366.2	100.0
TOTAL LOAD ON PLANT	8366.2	
		•
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
ELECTRICITY	21337.4	100.0
	========	=======================================
LOAD SATISFIED	21277 4	100.0
TOTAL LOAD ON PLANT	21337.4	100.0
TOTAL LOAD ON PLANT	21337.3	

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 86.F

REPORT- PS-D PLANT LOADS SATISFIED

WEATHER FILE- NEWARK, NJ

------(CONTINUED)------

SUMMARY OF LOADS MET

	TOTAL	LOAD	TOTAL	PEAK	HOURS
TYPE OF LOAD	LOAD	SATISFIED	OVERLOAD	OVERLOAD	OVERLOADED
	(MBTU)	(MBTU)	(MBTU)	(MBTU)	
HEATING LOADS	3096.9	3096.9	0.000	0.000	0
COOLING LOADS	8366.2	8366.2	0.000	0.000	0
ELECTRICAL LOADS	21337.3	21337.4	0.000	0.000	0

WEATHER FILE- NEWARK, NJ REPORT- PS-H EQUIPMENT USE STATISTICS

	AVG	MAX	MON					
EQUIPMENT	OPER	LOAD	DAY	SIZE OPER	SIZE OPER	SIZE OPER	SIZE OPER	SIZE OPER
	RATIO	(MBTU)	HR	(MBTU) HRS	(MBTU) HRS	(MBTU) HRS	(MBTU) HRS	(MBTU) HRS
HW-BOILER	0.148	4.101	2 20 3	4.101 5088				
HERM-CENT-CHLR	0.292	7.613	6 13 15	7.800 3672				
COOLING-TWR	0.296	9.214	6 13 15	2.379 14688				

ENTECH ENGINEERING READING, PA 196 REPORT- PV-A EQUIPMENT SIZES

RING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:41:3: 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 6/12/1996 10:41:33 PDL RUN 1

WEATHER FILE- NEWARK, NJ

NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER

E Q U I P M E N T SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD (MBTU/H) AVAIL (MBTU/H HW-BOILER 4.712 1 1 HERM-CENT-CHLR 7.800 1 1 COOLING-TWR 2.379 4 4 CTANK-STORAGE 73.200 1 1

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:41:33 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK. NJ

equipment	0 10	20					PART LOAD		-	10	00 - 110+	TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	BLEC USED (MBTU)	THERMAL USED (MBTU)
HW-BOILER	2851 2851	617 617	617 617	459 459	307 307	134 134		32 32	9 9	4	1	5088	3532.8	0.0	229.0	5128.5
HERM-CENT-CHLR	424 424	57 57	39 39	21 21	19 19	16 16		17 17	8 8	236 236	982 982	1836	8721.1	0.0	2401.3	0.0
COOLING-TWR	468 468	53 53	22 22	11 11	12 12	14 14	-	4 4	3 3		1226 1226	1836	11122.4	0.0	411.5	0.0
CTANK-STORAGE	166 1738	152 0	172 0	266 0	212 0	169 0		216 0	111	28 0	28 0	1738	5723.4	0.0	0.0	0.0

HOT LOOP CIRCULATION PUMP BLECTRICAL USE = 177.2 MBTU
COLD LOOP CIRCULATION PUMP BLECTRICAL USE = 950.4 MBTU

NOTES TO TABLE

- 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:41:33 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D FLANT LOADS SATISFIED

device 10-5 Mari double but the

HEATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD _____ HW-BOILER 3532.8 100.0 **** TOTAL LOAD ON PLANT LOAD SATISFIED 3532.8 100.0 3532.8 COOLING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD COOLING LOADS PERSON STREET HERM-CENT-CHLR 8721.1 98.2 -----LOAD SATISFIED 8721.1 98.2 TOTAL LOAD ON PLANT 8877.2 PCT OF TOTAL LOAD ELECTRICAL LOADS MBTU SUPPLIED _____ BLECTRICITY 23174.3 100.0 LOAD SATISFIED 23174.3 100.0 TOTAL LOAD ON PLANT 23174.2 STORAGE TANK USE MBTU STORED MBTU RETURNED MBTU LOST MBTU RESIDUAL 73.27 CTANK-STORAGE 5798.4 5723.4 1.71

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 0 HOURS

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS COOLING LOADS ELECTRICAL LOADS	3532.8	3532.8	0.000	0.000	0
	8877.2	8721.1	671.417	33.169	218
	23174.2	23174.3	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:41:33 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					
ROUIPMENT	OPER RATIO	LOAD (MBTU)	DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
HW-BOILER	0.147	4.712	2 20 3	4.712 5088				
HERM-CENT-CHLR	0.609	6.719	5 27 21	7.800 1836				
COOLING-TWR	0.637	8.526	7 28 22	2.379 7344				
CTANK-STORAGE	0.457	7.272	6 13 15	73.200 1738				

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:41:33 PDL RUN 1
READING, PA 19603 4130.05 FT. MOMMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE - NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FURL-OIL
CATEGORY OF USE		
SPACE HEAT	229.01	5128.55
SPACE COOL	2812.84	0.00
HVAC AUX	5352.46	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.49	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.37	0.00
TOTAL	23174.17	5128.55
IUIAL	431/4.1/	5128.55

TOTAL SITE ENERGY 28302.79 MBTU 85.9 KBTU/SQFT-YR GROSS-AREA 85.9 KBTU/SQFT-YR NBT-AREA TOTAL SOURCE ENERGY 74720.99 MBTU 226.8 KBTU/SQFT-YR GROSS-AREA 226.8 KBTU/SQFT-YR NBT-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 2.5

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING EZDOR - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL
REPORT- FV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

		NUMBER NUMBER	NUMBER	NUMBER	NUMBER
BQUIPMENT		INSTO SIZE INSTO AVAIL (MBTU/H) AVAIL		SIZE INSTD	SIZE INSTD
	(MBTU/H) AVAIL (MBTU/H)	MANTE (MRIO/E) MANTE	(MBTU/H) AVAIL (MBTU/H) AVAIL	(MBTU/H) AVAIL
HW-BOILER	4.712 1 1				
HERM-CENT-CHLR	7.800 1 1				
HERM-CERT-CHIR	7.800 1 1				
COOLING-TWR	2.379 4 4				

ENTECH ENGINEERING EZDOS - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/12/1996 10:22:54 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ

REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ

BQUIPMENT	0 10	20	_	IOURS A						0 1	00 - 110+	TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	BLEC USED (MBTU)	THERMAL USED (MBTU)
HW-BOILER	2851 2851	617 617	617 617	459 459	307 307	134 134	57 57	32 32	9 9	4		5088	3532.8	0.0	229.0	5128.5
HERM-CENT-CHLR	1092 1092	504 504	749 749	469 469	312 312	340 340	170 170	36 36	0	0	0	3672	8802.2	0.0	1987.2	0.0
COOLING-TWR	1230 1230	587 587	542 542	328 328	143	106	122	122 122	112 112	89 89	291 291	3672	10789.4	0.0	813.3	0.0

HOT LOOP CIRCULATION PUMP BLECTRICAL USB = 177.2 MBTU
COLD LOOP CIRCULATION PUMP ELECTRICAL USB = 950.4 MBTU

NOTES TO TABLE

- 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

RNTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED MEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HW-BOILER	3532.8	
LOAD SATISFIED TOTAL LOAD ON PLANT	3532.8 3532.8	100.0
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM~CENT-CHLR	8802.2	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	8802.2 8802.2	100.0
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
BLECTRICITY	23162.0	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	23162.0 23161.8	100.0

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 86.F

10:22:54 PDL RUN 1

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3532.8	3532.8	0.000	0.000	0
COOLING LOADS	8802.2	8802.2	0.000	0.000	0
BLECTRICAL LOADS	23161.8	23162.0	0.000	0.000	0

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H BQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

BQUIPMENT	AVG OPER RATIO	MAX LOAD (MBTU)	MON	DAY		SIZE (MBTU)	OPER HRS	SIZE (MBTU)	OPER HRS	SIZE OPER (MBTU) HRS	SIZE OPER	SIZE OPER (MBTU) HRS
HW-BOILER	0.147	4.712	2	20	3	4.712	5088					
HERM-CENT-CHLR	0.307	7.282	8	18	15	7.800	3672					
COOLING-TWR	0.309	8.785	8	18	15	2.379	14688					

ENERGY TYPE IN SITE METU -	BLECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	229.01	5128.55
SPACE COOL	2800.53	0.00
HVAC AUX	5352.49	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.54	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.39	0.00
TOTAL	23161.97	5128.55

TOTAL SITE ENERGY 28290.50 MBTU 85.9 KBTU/SQFT-YR GROSS-AREA 85.9 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 74684.07 MBTU 226.6 KBTU/SQFT-YR GROSS-AREA 226.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

MDDHH		HERM-CEN T-CHLR	HERM-CEN T-CHLR	HERM-CEN T-CHLR	COOLING- TWR	COOLING- TWR	COOLING- TWR	COOLING- TWR	
	LOAD	BLECTRIC USE		LEAVING COLD TEM	WATER FLOWRATE		PAN BLEC	PUMP BLBC	
	BTU/HR	BTU/HR		F	GAL/MIN		BTU/HR	BTU/HR	
	(1)	(3)	(12)	(13)	(8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (JAN)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0 0.0	0.	٥.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY (FEB)								
MN	٥.	0.	0.0		0.0	0.0	0.	0.	
MX	0.	o.	0.0	0.0			0.	0.	
SM	0.	0.	0.0	0.0	0.0		0.	0.	
ΑV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY (MAR)	_						_	
MN	0.		0.0				0.	0.	
MX	0.	٥.		0.0	0.0		0.	0.	
SM	0.	0.		0.0	0.0		0.	٥.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY MN	SUMMARY (APR) 0.	0	0.0	2.2		0.0	0.	0.	
MIX	0.	0.	0.0	0.0	0.0 0.0	0.0	0.		
SM	0.	0.	0.0					0.	
AV	0.	0. 0.	0.0	0.0	0.0	0.0	0. 0.	0. 0.	
		u.	0.0	0.0	0.0	0.0	0.	U.	
101	SUMMARY (MAY)	•				0.0	_	_	
MIN MIX	0.	1250022	0.0	0.0	1050	0.0	. 0.		
MA. SM	6348487. 592633024.	14037033.	25522.2	20.0	1950.0	7.9	140410.		
AV	796550.	200777.	34.4	20852.3	1006.5	1.1	46451604. 62435.	34738696. 46692.	
MONTHLY	SUMMARY (JUN)								
MIN	302722. 7271629.	142762.	64.6	53.9	1950.0	0.5	106446.	90465.	
MX	7271629.	1508870.	84.1	56.3	1950.0	9.1			
SM	1993556224.	434153376.	50592.8	39414.0	1404000.1		96531648.		
AV	2768828.	602991.			1950.0	3.5	134072.	90465.	
	SUMMARY (JUL)								
MN	302722.	142762.	64.4	53.9	1950.0	0.5 8.8	112750.		
	7050099.	1439969.	82.5	56.3	1950.0	8.8	140410.		
SM	2276703488.					2892.9			
AV	3060085.	652651.	71.9	54.8	1950.0	3.9	137434.	90465.	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA 420 ONLY W/OA SCHOL

RP_1		RLY-REPORT	1130.00				PINOACO - DIN I	ACK HILD CHILL W/C	PAGE 2-
	HERM-CEN	HERM-CEN		HERM-CEN			COOLING-	COOLING-	
	T-CHLR	T-CHLR	T-CHLR	T-CHLR	TWR	TWR	TWR	TWR	
	LOAD	BLECTRIC	ENTERING		WATER	RANGE	FAN	PUMP	
		USB	COND TEM	COLD TEM	FLOWRATE		BLEC	ELEC	
	BTU/HR	BTU/HR			GAL/MIN	R		BTU/HR	
	(1)	(3)	(12)	(13)	(8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (AUG)								
MN	302722.	142762.	64.5	53.9	1950.0	0.5	107603.	90465.	
SM	2224733696.	480761472.	53669.2	40786.8	1450800.1	2834.7	140410. 101112896.	67306216.	
AV	2990234.	646185.	72.1	54.8	1950.0	3.8	135904.		
MONTHLY	SUMMARY (SEP)								
MN	302722.	142762.	64.5	53.9	1950.0	0.5	106446.	90465.	
MX	6235474.	1244477.	82.3	56.0	1950.0	7.7	140410.	90465.	
SM	1422730752.	342039488.	49467.6	39209.6	1404000.1	1868.7	140410. 93164680.	65135048.	
ΑV	1976015.						129395.		
MONTHLY	SUMMARY (OCT)								
MIN	0.	0.	0.0	0.0	0.0	0.0	0. 140410. 41607896.	0. 90465.	
MX	5014499.	925996.	71.0	55.5	1950.0	6.2	140410.	90465.	
SM	291873184.	95304560.	23507.7	19454.6	702000.1	426.8	41607896.	32567528.	
AV	392303.	128098.	31.6	26.1	943.5	0.6	55925.	43774.	
MONTHLY	SUMMARY (NOV)								
MIN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	u.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY (DEC)								
MIN	0.	0.				0.0		0.	
MX	0.	0.	0.0	0.0		0.0	0.	0.	
SM	0.	0.	0.0	0.0		0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY								
MN	0.				0.0				
	7281769.								
SM		1987209344.			7160400.5		481119712.		
AV	1004821.	226850.	29.3	22.9	817.4	1.3	54922.	37921.	

RRA	ENTECH ENGINE		EZDOE - ELI'	TE SOFTWARE DEVELOPMEN MONMOUTH - MYER CENT	NT INC	DO:	8-2.1D	6/12/199	6 10:2 V W/ON CO	2:54	PDL F	UN 1
RP_2	⇒ HOUR	LY-REPORT								PAG		l- 1
MMDDHH	HW-BOILE	HW-BOILE	HW-BOILE	HM-BOILE								
	R	R	R	R								
			USE	CAPACITY RUNNING								
	BTU/HR	BTU/HR	BTU/HR	BTU/HR								
	(1)	(3)	(4)	(7)								
	SUMMARY (JAN)											
MIN	15616. 4230237. 941701824.	1374.	24498.	4712348.								
MX	4230237.	103672.	5165285.	4712348.								
SM	941701824.	54773668.	1334094848.	3505984256.								
AV	1265728.	73621.	1793138.	4712345.								
MONTHLY	SUMMARY (FRB)											
MN	15616.	1374.	24498. 5654817.	4712348.								
MX		103672.	5654817.	4712348.								
SM	757747008.	43139200.	1068134464.	3166695680.								
AV	1127600.	64195.	1589486.	4712345.								
MONTHLY	SUMMARY (MAR)											
MIN	15616.	1374.	24498.	4712348.								
MX	2520241.	103672.	3353212.	4712348.								
SM	496955712.	37184240.	747335360.	3505984256.								
AV	667951.	49979.	3353212. 747335360. 1004483.	4712345.								
MONTHLY	SUMMARY (APR)											
MN	15616.	1374.	24498.	4712348.								
MX	1867575.	103672.	2630422.	4712348.								
SM	15616. 1867575. 149607136.	12449244.	231204752.	3392888064.								
AV	207788.	17291.	321118.	4712345.								
	SUMMARY (MAY)											
MN	0.	0.	0. 495961.	0.								
MX		27821.	495961.									
SM	18507140.			1696444672.								
AV	24875.	2189.	39024.	2280168.								
	SUMMARY (JUN)											
MON	0.	0.	٥.	7.								
MX	0.	0.	0.									
SM	0.	0.	٥.	0.								
AV	0.	0.	0.	0.								
	SUMMARY (JUL)											
MN	0.	0.	0.									
MX	0.	0.	0.	••								
SM	0.	٥.	٥.	Ο.								
AV	0.	0.	٥.	0.								

	ENTECH	ENGINE	Bering	EZDOR - BI	ITE SOFTWARE	DEVELOPMENT	INC	DOR	-2.1D	6/12/	1996	10:22:5	A DDT	DITM 1
	DING,	PA	19603	4130.05 PT	. MONMOUTH -	MYER CENTER	, NJ	FIMOACO -	SIM MO	CA H20	ONLY	W/OA SCHOOL	4 FDL	KON 1
RP_2			RLY-REPORT											2- 1
	HW-BOI		HW-BOILE	HW-BOILE	HW-BOILE									
	R		R	R	R									
	LOAD		BLECTRIC	FUEL	CAPACITY									
			USE	USB	RUNNING									
	BTU/HR		BTU/HR	BTU/HR	BTU/HR									
	(1)	(3)	(4)	(7)									
MONTHLY	SUMMARY	(AUG)												
MIN		0.	0.	0.		0.								
MX		0.	0.	0.		0.								
SM		0.	0.	0.		0.								
AV		٥.	0.	0.		0.								
MONTHLY	SUMMARY	(SEP)												
MN		0.	0.	0.		0.								
MX		0.	0.	0.		0.								
SM		0.	0.	0.		0.								
AV		0.	0.	0.		0.								
MONTHLY	SUMMARY	(OCT)												
MN		0.	0.	0.		0.								
MX	839	5070.	73486.	1310036.										
SM	28528	8948.	2510547.	44755484.	180954099	2.								
AV	38	8345.	3374.	60155.	243217	79.								
MONTHLY	SUMMARY	(NOV)												
MN	15	5616.		24498.	471234	18.								
MX			103672.	3184438.	471234	8.								
SM	333158	8336.	26324396.	507959936.	339288806	4.								
ΑV	462	2720.	36562.	705500.	471234	5.								
	SUMMARY													
MIN		5616.	1374. 103672.	24498.	471234	8.								
MX	3005							-						
SM	806623		51001972.	1165970432.		6.								
AV	1084	1172.	68551.	1567165.	471234	5.								
YEARLY S														
MIN			0.	0.		0.								
MX		2348.												
SM	3532829		229011888.		2397640908									
AV	403	3291.	26143.	585444.	273703	3.								

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL REPORT- EV-B COST OF FUELS AND UTILITIES

ENERGY SOURCE	ENERGY UNIT (BTU)	UNIFORM COST /UNIT (\$)	COST ESCLA- ATION RATE	MIN MNTHLY CHARGE (\$)	RATE LIMIT /UNIT (\$)	FIXED MNTHLY CHARG1 (\$)	PIXED MNTHLY CHARG2 (\$)	ASSIGN- SCHEDULB (U-NAME)	ASSIGN- CHARGEI (U-NAME)	ASSIGN- CHARGE2 (U-NAME)
BLECTRIC	3413.00	0.0000	5.000	0.00	1000000.000	0.00	0.00	YELEC1		
FUEL-OIL	138690.00	0.5900	5.000	0.00	1000000.000	0.00	0.00			

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

REPORT- ES-D SUMMARY OF FUEL AND UTILITY USE AND COSTS BLECTRIC FUEL-OIL MONTH UNIT= UNIT= 3413.00 138690.00 Jan ENERGY CONSUMPTION (UNIT/MO) 492409. 9619. PEAK DEMAND (UNIT/HR) 1462. 37 TOTAL COST (\$) 47932.06 5675.37 ENERGY CONSUMPTION (UNIT/MO) 443235. 7702. PEAK DEMAND (UNIT/HR) 1462. TOTAL COST (\$) 44396.45 4543.95 ENERGY CONSUMPTION (UNIT/MO) 507936. 5389. PEAK DEMAND (UNIT/HR) 1460. 24. TOTAL COST (\$) 49035.91 3179.24 ENERGY CONSUMPTION (UNIT/MO) 471645. 1667. PEAK DEMAND (UNIT/HR) 1450. 19. TOTAL COST (\$) 46338.28 983.57 MAY ENERGY CONSUMPTION (UNIT/MO) 569592. 209. PEAR DEMAND (UNIT/HR) 1922. TOTAL COST (\$) 57425.30 123.51 JUN ENERGY CONSUMPTION (UNIT/MO) 700162. ٥. PEAK DEMAND (UNIT/HR) 1992. 0. TOTAL COST (\$) 72601.06 0.00 JUL ENERGY CONSUMPTION (UNIT/MO) 706795. ο. PEAK DEMAND (UNIT/HR) 1987. ٥. TOTAL COST (\$) 72757.86 0.00 AUG ENERGY CONSUMPTION (UNIT/MO) 736074. α. PEAK DEMAND (UNIT/HR) 1989. TOTAL COST (\$) 75352.55 0.00 SEP ENERGY CONSUMPTION (UNIT/MO) 661846. ٥. PEAK DEMAND (UNIT/HR) TOTAL COST (\$) 68981.09 0.00 ENERGY CONSUMPTION (UNIT/MO) 540036. 323. PEAK DEMAND (UNIT/HR) 1831. TOTAL COST (\$) 54517.98 190.39 NOV ENERGY CONSUMPTION (UNIT/MO) 465371. 3663. PEAK DEMAND (UNIT/HR) 1459. 23. TOTAL COST (\$) 45967.96 2160.91 DEC ENERGY CONSUMPTION (UNIT/MO) 491305. 8407 PEAK DEMAND (UNIT/HR) 1462. 28. 4960.15 TOTAL COST (\$) 47852.72 ENERGY CONSUMPTION (UNIT/YR) 6786406. 36978. PRAK DEMAND (UNIT/HR) TOTAL COST (\$) 1992. 683159.25 21817.08

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/12/1996 10:22:54 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHO1
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
AN								
	4OFPKKWH	744	492409.	35404.21	1462.	1462.	0.00	
	BONPKDMHTG	252	299165.	0.00	1462.	1462.	12527.85	
EB								47932.06
ממ	40FPKKWH	672	443235.	31000 00				
	BONPKDMHTG	228	269534.	31868.59	1462.	1462.	0.00	
			207334.	0.00	1462.	1462.	12527.85	
AR								44396.45
	40FPKKWH	744	507936.	36520.62	1460.	1460.	0.00	
	EONPKDMHTG	276	325872.	0.00	1460.	1460.	12515.29	
						1400.	12313.23	49035.91
PR								42033.31
	40FPKKWH	720	471645.	33911.25	1450.	1450.	0.00	
	BONPKDMHTG	252	296759.	0.00	1450.	1450.	12427.03	
AY								46338.28
A I	40FPKKWH	744	560500					
	RONPKDMHTG	252	569592. 337720.	40953.69	1922.	1922.	0.00	
	AOM PROPERTY	432	33//20.	0.00	1922.	1922.	16471.62	
UN								57425.30
	40FPKKWH	456	286503.	20599.54	1091.	1091.	0.00	
	EONPKDMCL.	264	413660.	0.00	1992.	1992.	18867.39	
	BONPKKWH	264	413660.	33134.14	1992.	1992.	0.00	
							7.00	72601.06
JL.								
	40FPKKWH	504	325586.	23409.62	1076.	1076.	0.00	
	EONPKDMCL EONPKKWH	240 240	381209.	0.00	1987.	. 1987.	18813.38	
	DONPARMA	240	381209.	30534.86	1987.	1987.	0.00	
JG								72757.86
	40FPKKWH	468	297774.	21409.93	1099.	1099.	0.00	
	EONPKDMCL	276	438300.	0.00	1989.	1989.	0.00 18834.75	
	EONPKKWH	276	438300.	35107.86	1989.	1989.	0.00	
						2505.	0,00	75352.55
3 <i>P</i>								
	4OFPKKWH	468	280945.	20199.94	1069.	1069.	0.00	
	BONDKDMCL	252	380901.	0.00	1929.	1929.	18270.95	
	RONPKKWH	252	380901.	30510.20	1929.	1929.	0.00	
T								68981.09
	4OFPKKWH	744	540036.	38828.57	1071			
	BONPKDMHTG	240	310258.	0.00	1831. 1831.	1831.	0.00	
				0.00	1031.	1831.	15689.41	64517 00
ν								54517.98
	40FPKKWH	720	465371.	33460.16	1459.	1459.	0.00	
	EONPKDMHTG	240	283017.	0.00	1459.	1459.	12507.81	
								45967.96

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/12/1996 10:22:54 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

				************				CONTINUED
MONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
DEC								
	40PPKKWH	744	491305.	35324.86	1462.	1462.	0.00	
	BONPKDMHTG	252	298773.	0.00	1462.	1462.	12527.85	
								47852.72
TOTAL			6786406.	501178.03			181981.19	683159.25

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$-----$
                $EZ-DOE LOADS INPUT$
                   $ GENERAL PROJECT DATA
TITLE LINE-1 *
                       ENTECH ENGINEERING
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
      LINE-3 * READING,
                                 PA
                                         19603
      LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
      LINE-5 *FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24* ...
ABORT
                  ERRORS
DIAGNOSTIC
                  WARNINGS ..
LOADS-REPORT
                 SUMMARY=(LS-F) ..
BUILDING-LOCATION ALTITUDE = 15.
                  X-REF = 0.0
                  Y-REF = 0.0..
                  JAN 1 1994 THRU DEC 31 1994 ...
RUN-PERIOD
                   $ SCHEDULES
D24FULON =DAY-SCHEDULE (1,24) (1.) ..
   FULON12 =DAY-SCHEDULE
                        (1,6) (0.)
                         (7,18) (1.)
                         (19,24) (0.) ...
D24FULOFF =DAY-SCHEDULE (1,24) (0.) ..
                         (1,6) (0.07)
(7,8) (0.7,0.9)
DOCCUP01 =DAY-SCHEDULE
                         (9,14) (1.)
                         (15,18) (0.9,0.7,0.25,0.15)
                         (19,24) (0.07) ...
d24occofhr =DAY-SCHEDULE
                        (1,24) (0.07) ...
                         (1,6) (0.1)
DWKLITE1 =DAY-SCHEDULE
                         (7,8) (0.5,0.9)
                         (9,14) (1.)
                         (15,18) (0.9,0.7,0.25,0.15)
                         (19,24) (0.1) ...
DNOTLITE1 =DAY-SCHEDULE
                        (1,24) (0.1) ...
                        (1,24) (0.8) ...
DINFILWIN1 =DAY-SCHEDULE
  FILSUM1 =DAY-SCHEDULE (1,24) (0.8) ...
                         (1,7) (0.15)
DEOPAWKDAY = DAY-SCHEDULE
```

(8,19) (0.5)

(20,24) (0.15) ...

```
DEQPAWKEND =DAY-SCHEDULE (1,24) (0.15) ...
W24FULON7D =WEEK-SCHEDULE (ALL) D24FULON ...
   01
          =WEEK-SCHEDULE
                         (WD) DOCCUP01
                           (WEH) d24occofhr ...
         =WEEK-SCHEDULE
                           (WD) DWKLITE1
WLITE1
                           (WEH) DNOTLITE1
WINFILWIN1 =WEEK-SCHEDULE (ALL) DINFILWIN1 ...
WINFILSUM1 =WEEK-SCHEDULE (ALL) DINFILSUM1
WEQUIPSCHA =WEEK-SCHEDULE (WD) DEQPAWKDAY
                           (WEH) DEOPAWKEND ...
$ 24 HR FULON 7D/WK WK1
Y24FULON7D =SCHEDULE THRU DEC 31 W24FULON7D
$ Y LOADS OCCUP SCH 01
          =SCHEDULE THRU DEC 31 WOCC01
YOCC01
$ YR LIGHTING SCH 1/.1
YLITE1 =SCHEDULE THRU DEC 31 WLITE1
S YR INFIL SCHD 1
   FIL1 =SCHEDULE THRU MAY 15 WINFILWIN1
                     THRU OCT 15 WINFILSUM1
                     THRU DEC 31 WINFILWIN1
$ YR SCH EQUIP SCHA 50/15
YEQUIPSCHA = SCHEDULE THRU DEC 31 WEQUIPSCHA ...
                    $ CONSTRUCTION TYPES
 S ROOF CON1 MAIN ROOF
ROOFCON1 = CONSTRUCTION U-VALUE = 0.100 ...
 S EXTERIOR WAL1 TYP
EXWAL1 = CONSTRUCTION
                       U-VALUE = 0.080
 S INTERIOR WALL 1 TYP
INTWAL1 = CONSTRUCTION
                       U-VALUE = 0.480
                         ABSORPTANCE = 0.000
 $ EXTERIOR DOOR TYP 01 U=.4
   DR01 =CONSTRUCTION U-VALUE = 0.400 ...
 $ UNDERGRND WALL 1
       =CONSTRUCTION
                        U-VALUE = 0.100
UWAL1
                         ABSORPTANCE = 0.500 \dots
```

GLTYP1 =GLASS-TYPE SHADING-COEF = 0.560 PANES = 1

GLASS-CONDUCTANCE = 0.520 ...

MUH

S SPACE DESCRIPTION

AREA = 23230.0 VOLUME = 185840.0 OSTMUH =SPACE

TEMPERATURE = (68.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 1.0 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA INF-METHOD = AIR-CHANGE

AIR-CHANGES/HR = 1.0 INF-SCHEDULE = YINFIL1

E-WHEIGHT = 14.0 WIDTH = 105.0 CONS = EXWAL1 AZIMUTH = 90 ..

E-WHEIGHT = 14.0 WIDTH = 100.0 CONS = EXWAL1

AZIMUTH = 270

U-W HEIGHT = 14.0 WIDTH = 344.0 CONS = UWAL1 ...

HEIGHT = 232.3 WIDTH = 100.0 CONS = UWAL1 .. U-W

AREA = 17842.0 VOLUME = 298854.0 =SPACE

> TEMPERATURE = (68.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 1.0

> LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0 INF-SCHEDULE = YINFIL1

E - WHEIGHT = 22.3 WIDTH = 10.0 CONS = EXWAL1

AZIMUTH = 0 ..

E-WHEIGHT = 22.3 WIDTH = 167.0 CONS = EXWAL1

AZIMUTH = 270 ...

WINDOW HEIGHT = 2.7 WIDTH = 135.3 G-T = GLTYP1 ...

E-WHEIGHT = 22.3 WIDTH = 24.0 CONS = EXWAL1

AZIMUTH = 225 ..

WINDOW HEIGHT = 2.7 WIDTH = 19.4 G-T = GLTYP1 ..

E-WHEIGHT = 22.3 WIDTH = 30.0 CONS = EXWAL1

AZIMUTH = 135

WINDOW HEIGHT = 2.7 WIDTH = 16.2 G-T = GLTYP1 ..

1STMDX =SPACE AREA = 15561.0 VOLUME = 550167.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 2.0 LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1 EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 1.0 INF-METHOD = NONE ..

E-W HEIGHT = 22.3 WIDTH = 24.0 CONS = EXWAL1 AZIMUTH = 45 ..

WINDOW HEIGHT = 2.7 WIDTH = 19.4 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 364.0 CONS = EXWAL1 AZIMUTH = 315 ..

WINDOW HEIGHT = 2.7 WIDTH = 295.0 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 20.0 CONS = EXWAL1 AZIMUTH = 135 ..

WINDOW HEIGHT = 2.7 WIDTH = 16.2 G-T = GLTYP1 ...

E-W HEIGHT = 37.6 WIDTH = 112.0 CONS = EXWAL1 AZIMUTH = 90 ..

E-W HEIGHT = 37.6 WIDTH = 90.0 CONS = EXWAL1 AZIMUTH = 135 ..

DOOR HEIGHT = 7.0 WIDTH = 5.0 CONS = EXTDR01 ...

E-W HEIGHT = 37.6 WIDTH = 112.0 CONS = EXWAL1 AZIMUTH = 270 ..

DOOR HEIGHT = 7.0 WIDTH = 5.0 CONS = EXTDR01 ..

ROOF HEIGHT = 110.0 WIDTH = 70.0 CONS = ROOFCON1 TILT = 0 ..

2STMDX =SPACE AREA = 17634.0 VOLUME = 171932.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 15.0

TNF-METHOD = NONE

3STMDX =SPACE AREA = 11911.0 VOLUME = 115179.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 5.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 10.0

INF-METHOD = NONE ..

4STMDXCLNR =SPACE AREA = 6966.0 VOLUME = 67361.0 TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 5.0
LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 15.0
INF-METHOD = NONE

ROOF HEIGHT = 162.0 WIDTH = 43.0 CONS = ROOFCON1 TILT = 0 ..

AREA = 5117.0 VOLUME = 49481.4

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 5.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 5.0

INF-METHOD = NONE ..

ROOF HEIGHT = 119.0 WIDTH = 43.0 CONS = ROOFCON1 TILT = 0 ..

OLSTMDX =SPACE AREA = 20043.0 VOLUME = 160344.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 2.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 2.0

TNF-METHOD = NONE

E-W HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1 AZIMUTH = 225 ...

WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ...

WINDOW HEIGHT = 2.7 WIDTH = 162.0 G-T = GLTYP1 ..

E-W HEIGHT = 14.0 WIDTH = 132.0 CONS = EXWAL1 AZIMUTH = 90 ..

E-W HEIGHT = 14.0 WIDTH = 96.0 CONS = EXWAL1 AZIMUTH = 180 ..

WINDOW HEIGHT = 2.7 WIDTH = 68.0 G-T = GLTYP1 ...

E-W HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1 AZIMUTH = 225 ..

WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ...

WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ..

E-W HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1 AZIMUTH = 225 ...

WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ..

```
WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ..
                     HEIGHT = 200.0 WIDTH = 60.5 CONS = ROOFCON1
             ROOF
                     TILT = 0 ...
             E-W
                     HEIGHT = 14.0 WIDTH = 84.0 CONS = EXWAL1
                     AZIMUTH = 90
               WINDOW HEIGHT = 2.7 WIDTH = 68.0 G-T = GLTYP1 ..
                     HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1
             E-W
                     AZIMUTH = 45
               WINDOW HEIGHT = 2.7 WIDTH = 226.8 G-T = GLTYP1 ...
               WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ...
             E-W
                     HEIGHT = 14.0 WIDTH = 200.0 CONS = EXWAL1
                     AZIMUTH = 135
               WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ..
               WINDOW HEIGHT = 2.7 WIDTH = 162.0 G-T = GLTYP1 ...
            W-U
                   HEIGHT = 14.0 WIDTH = 73.0 CONS = UWAL1 ..
                   HEIGHT = 399.6 WIDTH = 100.0 CONS = UWAL1 ..
            U-W
             E-W
                     HEIGHT = 14.0 WIDTH = 60.0 CONS = EXWAL1
                     AZIMUTH = 45
              WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ...
             E-W
                     HEIGHT = 14.0 WIDTH = 132.0 CONS = EXWAL1
                     AZIMUTH = 90
              WINDOW HEIGHT = 2.7 WIDTH = 106.9 G-T = GLTYP1 ...
                     HEIGHT = 399.6 WIDTH = 100.0 CONS = ROOFCON1
             ROOF
                     TILT = 0
            U-W
                    HEIGHT = 14.0 WIDTH = 73.0 CONS = UWAL1 ...
            U-W
                   HEIGHT = 399.6 WIDTH = 100.0 CONS = UWAL1 ..
COMPUTE LOADS ..
INPUT SYSTEMS ..
                $-----$
```

\$ E Z - D O E SYSTEMS INPUT\$

\$ GENERAL PROJECT DATA

TITLE LINE-1 * ENTECH ENGINEERING LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*

END

```
LINE-3 * READING, PA 19603 *
```

LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
LINE-5 *FTMOBB0-STM(UH&AHU W/DX)4CLN REHT&HTON24* ...

ERRORS .. ERRORS .. WARNINGS ..

SYSTEMS-REPORT VERIFICATION=(SV-A)

SUMMARY=(SS-A,SS-B,SS-D)
REPORT-FREQUENCY = MONTHLY

THRU DEC 31 W24FULON ..

THRU OCT 15 W24FULON
THRU DEC 31 W24FULOFF ...

\$ SCHEDULES

	•		
DSHTSET1 DSCLGSET1	=DAY-SCHEDULE =DAY-SCHEDULE =DAY-SCHEDULE =DAY-SCHEDULE	(1,24) (1,24) (1,24) (1,24) (1,24) (1,7) (8,19)	(1.) (0.) (130.) (72.) (75.) (68.) (1.) (0.)
ONPK_D	=DAY-SCHEDULE	(1,7) (8,19)	
OFFPK_END	=DAY-SCHEDULE	(1,24)	(1.)
W24FULON	=WEEK-SCHEDULE	(ALL)	DS240N1
W SET1	=WEEK-SCHEDULE	(ALL)	DSHTSET1
WCLSET1	=WEEK-SCHEDULE	(ALL)	DSCLGSET1
WLOTMPNOHT	=WEEK-SCHEDULE	(ALL)	DLOTMPNOHT
WHITMPNOCL	=WEEK-SCHEDULE	(ALL)	DHITMPNOCL
W24FULOFF	=WEEK-SCHEDULE	(ALL)	DS24OFF0
W4CLNRMT68	=WEEK-SCHEDULE	(ALL)	D4CLNRMT68
OFFPK_W	=WEEK-SCHEDULE	(WD) (WEH)	OFFPK_D OFFPK_END
ONPK_W	=WEEK-SCHEDULE	• •	ONPK_D DS24OFF0
YSON247D	FULON 24HRS 7D =SCHEDULE THRU	DEC 31	W24FULON
•	HEATING SEAS 1 =SCHEDULE THRU THRU		W24FULON W24FULOFF

\$ YR SCH COOL SEASON 1

YSCLSEAS1 =SCHEDULE THRU MAY 15 W24FULOFF

\$ YRSCH HTSET1 72 /NON0 YHTSET1 =SCHEDULE THRU MAY 15 WHTSET1 THRU OCT 15 WHTSET1 THRU DEC 31 WHTSET1 \$ YRSCH COLSET 72/NON 130 YCLSET1 =SCHEDULE THRU MAY 15 WCLSET1 THRU OCT 15 WCLSET1 THRU DEC 31 WCLSET1 S YR SCHD 4THCLNRM T=68 Y4CLNRMT68 = SCHEDULE THRU DEC 31 W4CLNRMT68 ... OFFPK YR =SCHEDULE THRU DEC 31 OFFPK W ONPK YR =SCHEDULE THRU DEC 31 ONPK W .. \$ ZONE DESCRIPTION =ZONEDESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 90.0OSTMUH HEAT-TEMP-SCH = Y4CLNRMT68 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS ... 1STMUH = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 90.0HEAT-TEMP-SCH = YHTSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS 1STMDX =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS 2STMDX =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS 3STMDX =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS DESIGN-HEAT-T = 68.0 DESIGN-COOL-T = 68.0 4STMDXCLNR =ZONE HEAT-TEMP-SCH = Y4CLNRMT68 COOL-TEMP-SCH = Y4CLNRMT68 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL ASSIGNED-CFM = 50000. OUTSIDE-AIR-CFM = 10000. SIZING-OPTION = FROM-LOADS HEATING-CAPACITY = -1000000.0DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.04STMOFFCLB = ZONE HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS .

OLSTMDX =ZONE

DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

BASEBOARD-CTRL = THERMOSTATIC

BASEBOARD-RATING = -240750.

SIZING-OPTION = FROM-LOADS

\$ SYSTEM DESCRIPTION

OSSTMUH =SYSTEM SYSTEM-TYPE = UHT

MAX-SUPPLY-T = 100.0 HEATING-SCHEDULE = Y4CLNRMT68

FAN-SCHEDULE = YSHTSEAS1 SUPPLY-DELTA-T = 0.18

SUPPLY-KW = 0.000059

NIGHT-CYCLE-CTRL = CYCLE-ON-ANY

ZONE-NAMES = (OSTMUH) ..

OSSTMDX =SYSTEM SYSTEM-TYPE = SZRH

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YSON247D

COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0

PREHEAT-T = 0.0 OA-CONTROL = FIXED

MIN-OUTSIDE-AIR = 0.2 MAX-OA-FRACTION = 0.2

FAN-SCHEDULE = YSON247D SUPPLY-DELTA-T = 2.4

SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF

NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0

PREHEAT-SOURCE = HOT-WATER

ZONE-NAMES = (OLSTMDX) ...

1SSTMUH =SYSTEM SYSTEM-TYPE = UHT

MAX-SUPPLY-T = 120.0 HEATING-SCHEDULE = YSON247D

FAN-SCHEDULE = YSON247D SUPPLY-DELTA-T = 0.18

SUPPLY-KW = 0.000059

NIGHT-CYCLE-CTRL = CYCLE-ON-ANY

ZONE-NAMES = (1STMUH) ...

1SSTMDX =SYSTEM SYSTEM-TYPE = SZRH

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YSON247D

COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0

PREHEAT-T = 0.0 OA-CONTROL = FIXED

MIN-OUTSIDE-AIR = 0.15 MAX-OA-FRACTION = 0.15

FAN-SCHEDULE = YSON247D SUPPLY-DELTA-T = 2.4

SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF

NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0

PREHEAT-SOURCE = HOT-WATER

ZONE-NAMES = (1STMDX)

2SSTMDX =SYSTEM SYSTEM-TYPE = SZRH

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YSON247D

COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0

PREHEAT-T = 0.0 OA-CONTROL = FIXED

MIN-OUTSIDE-AIR = 0.15 MAX-OA-FRACTION = 0.15

FAN-SCHEDULE = YSON247D SUPPLY-DELTA-T = 2.4

SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF

```
NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
PREHEAT-SOURCE = HOT-WATER
ZONE-NAMES = (2STMDX) ..

SYSTEM-TYPE = SZRH
MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0
HEATING-SCHEDULE = YSON247D
COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0
PREHEAT-T = 0.0 ECONO-LIMIT-T = 55.0
```

OA-CONTROL = FIXED MIN-OUTSIDE-AIR = 0.15

SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078

MAX-OA-FRACTION = 0.15 FAN-SCHEDULE = YSON247D

NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0 PREHEAT-SOURCE = HOT-WATER

4SSTMDXCLN =SYSTEM SYSTEM-TYPE = RHFS

=SYSTEM

MAX-SUPPLY-T = 70.0 MIN-SUPPLY-T = 50.0

HEATING-SCHEDULE = YSON247D

ZONE-NAMES = (3STMDX)

COOLING-SCHEDULE = YSON247D HEAT-SET-T = 50.0

PREHEAT-T = 0.0 MAX-HUMIDITY = 55.0 ECONO-LIMIT-T = 55.0 OA-CONTROL = FIXED SUPPLY-CFM = 50000. MIN-OUTSIDE-AIR = 0.2

MAX-OA-FRACTION = 0.2 FAN-SCHEDULE = YSON247D

SUPPLY-DELTA-T = 3.1 SUPPLY-KW = 0.00101

NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0 REHEAT-DELTA-T = 16. SIZING-OPTION = COINCIDENT

RETURN-AIR-PATH = DIRECT ZONE-NAMES = (4STMDXCLNR)

FMDXOFC =SYSTEM

RTMDX

SYSTEM-TYPE = SZRH

MAX-SUPPLY-T = 120.0 MIN-SUPPLY-T = 55.0

HEATING-SCHEDULE = YSON247D

COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0

OA-CONTROL = FIXED MIN-OUTSIDE-AIR = 0.15

MAX-OA-FRACTION = 0.15 FAN-SCHEDULE = YSON247D

SUPPLY-DELTA-T = 2.42 SUPPLY-KW = 0.000783

NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0

MIN-CFM-RATIO = 1.0 PREHEAT-SOURCE = HOT-WATER

ZONE-NAMES = (4STMOFFCLB) ...

\$ HOURLY REPORT DESCRIPTION

S_1	=REPORT-BLOCK VARIABLE-TYPE = OSSTMDX
S_2	VARIABLE-LIST = (33) = REPORT-BLOCK VARIABLE-TYPE = 1SSTMDX
S_3	VARIABLE-LIST = (33) = REPORT-BLOCK VARIABLE-TYPE = 2SSTMDX
S_4	VARIABLE-LIST = (33) =REPORT-BLOCK VARIABLE-TYPE = 3SSTMDX
S_5	VARIABLE-LIST = (33) =REPORT-BLOCK VARIABLE-TYPE = 4SSTMDXCLN
SP_1	VARIABLE-LIST = (33) = HOURLY-REPORT REPORT-SCHEDULE = OFFPK YR
	REPORT-BLOCK = $(S_1, S_2, S_3, S_4, S_5)$

END ..

COMPUTE SYSTEMS ...

```
$EZ-DOE PLANTS INPUT$
                   $ GENERAL PROJECT DATA
TITLE
     LINE-1 *
                       ENTECH ENGINEERING
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
      LINE-3 * READING,
                                 PA
      LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
      LINE-5 *FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24* ..
ABORT
                  ERRORS
DIAGNOSTIC
                  WARNINGS ..
PLANT-REPORT
                  VERIFICATION= (PV-A)
                  SUMMARY= (PS-D, PS-H, BEPS)
                  REPORT-FREQUENCY = MONTHLY ...
                   $ SCHEDULES
D24FULON =DAY-SCHEDULE (1,24) (1.) ...
D24FULOF =DAY-SCHEDULE (1,24) (0.) ..
OFFPK PD =DAY-SCHEDULE (1,7) (1.)
                         (8,19) (0.)
                         (20,24) (1.) ...
ONPK_PD =DAY-SCHEDULE (1,7) (0.)
                         (8,19) (1.)
                         (20,24) (0.) ...
OFFPK PEND =DAY-SCHEDULE (1,24) (1.) ..
W24FULON7D =WEEK-SCHEDULE (ALL) D24FULON ...
W24FULOF7D =WEEK-SCHEDULE (ALL) D24FULOF ..
OFFPK PW =WEEK-SCHEDULE (WD) OFFPK PD
                          (WEH) OFFPK PEND ..
ONPK PW =WEEK-SCHEDULE (WD) ONPK PD
                          (WEH) D24FULOF ..
$ YRSCH FUL ON 24HR/7D
Y24FULON7D =SCHEDULE THRU DEC 31 W24FULON7D ...
$ YRSCH HEATING SEAS1
  TSEAS1
         =SCHEDULE THRU MAY 15 W24FULON7D
                    THRU OCT 15 W24FULOF7D
```

\$ YRSCH COOL SEAS1
YCLSEAS1 = SCHEDULE THRU MAY 15 W24FULOF7D

THRU DEC 31 W24FULON7D

THRU OCT 15 W24FULON7D THRU DEC 31 W24FULOF7D ...

OFFPK PYR =SCHEDULE THRU DEC 31 OFFPK PW ...

PYR =SCHEDULE THRU DEC 31 ONPK PW ..

\$ EOUIPMENT DESCRIPTION

PLSTMBLR =PLANT-EQUIPMENT TYPE = STM-BOILER

SIZE = -999. ..

PLHRCCH1 = PLANT-EQUIPMENT TYPE = HERM-REC-CHLR

SIZE = -999. ..

PLDHW =PLANT-EOUIPMENT TYPE = DHW-HEATER

SIZE = -999...

PLANT-PARAMETERS BOILER-CONTROL = STANDBY HW-BOILER-HIR = 1.2

> TWR-WTR-SET-POINT = 85. TWR-CELL-MAX-GPM = 1.0 TWR-FAN-OFF-CFM = 0.1 CHILLER-CONTROL = STANDBY HERM-REC-COND-TYPE = AIR HERM-REC-COND-PWR = 0.15

CHILL-WTR-T = 55. CCIRC-HEAD = 100.0

CCIRC-DESIGN-T-DROP = 5.0 .HCIRC-HEAD = 90.0

HCIRC-DESIGN-T-DROP = 25.0

[-LOAD-RATIO TYPE = HERM-REC-CHLR

MIN-RATIO = 0.2500 MAX-RATIO = 1.0000

OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.1600 ...

RESOURCE = FUEL-OIL .. ENERGY-RESOURCE ENERGY-RESOURCE

RESOURCE = ELECTRICITY .. RESOURCE = NATURAL-GAS ... ENERGY-RESOURCE

S HOURLY REPORT DESCRIPTION

P 1 = REPORT-BLOCK VARIABLE-TYPE = HERM-REC-CHLR

VARIABLE-LIST = (1,3,18) ...

P 2 = REPORT-BLOCK VARIABLE-TYPE = STM-BOILER

VARIABLE-LIST = (1,3) ...

PR 1 = HOURLY-REPORT REPORT-SCHEDULE = OFFPK PYR

REPORT-BLOCK = (P 1, P 2)

END

COMPUTE PLANT ..

STOP ..

	ENT	ECH ENGIN	EERING	EZI	OOE - ELIT	E SOFTWARE	DEVELOPMENT	INC	DOE-2.1	.D 7/ 2/1	996 11:	14:27 LDI	RUN 1
	READING	, PA	19603	413	30.05 FT.	- HTUOMMON	MYER CENTER	, NJ FTM	10BB0-STM ((JH&AHU W/DX)4CLN REHT	&HTON24	
REPOR	T- LS-F	BUILDING	MONTHLY LOAD	COMPONE	NTS IN M	BTU			V	WEATHER FIL	E- NEWARK,	UN	
רדותדו)	S=MBTU)	WALLS	s ROOFS	INT SUR	UND SUR	INFIL	GL CON	GL SOL	OCCUP	LIGHTS	EQUIP	SOURCE	TOTAL
(ONI)	S=MD10)	WALLES	, ROOLD	11.1 0010	01.2 00.0	2012	52 55 1.	32 332	0000				
										-			
	HEATNG	-83.862		0.000	-212.447		-82.468	36.261	14.151	85.750	36.517	0.000	-612.056
JAN	SEN CL	-6.310	-38.603	0.000	0.000	-0.119 0.000	-1.870	0.652	9.539 7.780	168.409	351.052 0.000	0.000	482.750 7.780
	LAT CL								7.780				7.700
	HEATNG	-68.621	-156.563	0.000	-216.734	-189.372	-70.823	42.070	12.426	74.585	32.072	0.000	-540.961
FEB	SEN CL	-7.608	-32.893	0.000	0.000	-0.091	-2.275	0.972	9.050	155.865	318.863	0.000	441.884
	LAT CL					0.000			7.404		0.000	0.000	7.404
			122 071	0 000	 -239.948	_174 479	-63.959	52.415	13.678	80.537	33.590	0 000	-487.820
MAR	HEATNG SEN CL	-57.582	-132.071 -31.370	0.000	-2.315	-1.199	-3.488	3.867	11.828	191.225	370.952	0.000	529.798
PLEST	LAT CL	-3.702	31.3.0	0.000	2.525	0.168			9.718		0.000	0.000	9.886
													
	HEATNG	-30.976	-72.496	0.000	-198.498	-80.367	-37.630	43.543	9.593	57.298	25.313	0.000	-284.222
APR	SEN CL	-6.847	-12.841	0.000	-23.319	-0.521	-5.124	16.926	14.038	195.742	356.615	0.000	534.669
	LAT CL					2.284			11.522		0.000	0.000	13.807
	HEATNG	-16.076	-40.819	0.000	-126.276	-40.044	-21.455	32.337	6.201	38.238	18.118	0.000	-149.777
MAY	SEN CL	-1.600		0.000	-50.460	12.393	-4.759	37.771	17.499	216.032	369.560	0.000	605.604
	LAT CL					12.124			14.406		0.000	0.000	26.530
•	EATNG	-3.416		0.000	-54.526	-3.040	-6.449	13.978	1.972	14.254	8.914	0.000	-40.078 707.840
JUN	SEN CL	7.597	38.721	0.000	-65.841	28.412 40.982	-1.113	50.550	22.484 18.373	246.556	380.475 0.000	0.000	59.355
	<u>uni</u> cu												
	HEATNG	-1.117	-5.875	0.000	-22.761	-0.707	-3.078	7.168	0.844	6.770	5.469	0.000	-13.288
JUL	SEN CL	12.771	51.167	0.000	-56.196	39.412	1.431	59.045	22.069	240.206	375.222	0.000	745.127
	LAT CL					59.063			17.749		0.000	0.000	76.812
	HEATNG	-2.995	-10.395	0.000	-14.262	-1.734	-4.828	6.946	0.778	6.588	5.698	0.000	-14.203
AUG	SEN CL		38.144		-35.886					264.587			
	LAT CL					59.740			19.868		0.000	0.000	79.608
			·										
	HEATNG		-20.852			-9.052				13.893			-28.577
SEP	SEN CL	-1.788	6.271	0.000	-27.144	7.229 38.489	-7.512	45.710	21.644 17.550	238.465	372.306 0.000	0.000	655.179 56.038
	LAT CL						·						
	HEATNG	-24.907	7 -60.731	0.000	-50.097	-45.698	-27.409	26.462	5.612	37.082	19.063	0.000	-120.623
OCT	SEN CL	-7.365	-18.425	0.000	-20.823	-5.813	-9.031	25.884	17.247	209.216	360.954	0.000	551.844
	LAT CL					5.217			14.410		0.000		19.627
				0 000			-EN 602						-292.463
MOT	HEATNG		3 -113.060 3 -29.199										493.178
NOV	SEN CL LAT CL		-43.133	0.000	-7.730	5.465		2.031	10.549	,	0.000		16.014
	للت بديي												
4	TEATNG		2 -167.684										-521.602
DL	EN CL	-7.690	0 -37.184	0.000	-1.341	-0.627	-2.440	1.479		173.744			
	LAT CL					0.000			8.378		0.000	0.000	8.378

HEATING -418.048 -980.901 0.000 -1422.580 -1074.266 -452.151 335.029 90.788 558.953 257.531 0.000 -3105.646

TOT SEN CL -27.633 -57.046 0.000 -291.060 106.717 -40.973 303.995 192.964 2481.692 4352.166 0.000 7020.822 LAT CL 223.532 157.675 0.000 0.000 381.207

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ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

REPORT- SV-A SYSTEM DESIGN PARAMETERS

OSSTMUH

WEATHER FILE- NEWARK, NJ

SYSTEM NAME		ALTITUDE JLTIPLIER										
OSSTMUH		1.000										
SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING	
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR	
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	*
13960.	0.000	0.2	0.	0.000	0.0	0.000	0.000	0.000	0.000	0.00	0.00	
					MINIMUM	OUTSIDE	COOLING	I	EXTRACTION	HEATING	ADDITION	
ZONE		SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE	
NAME		FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER
OSTMUH		13960.	0.	0.824	1.000	0.	0.00	0.00	0.00	-480.58	-482.35	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

REPORT- SV-A SYSTEM DESIGN PARAMETERS OSSTMDX

WEATHER FILE- NEWARK, NJ

SYSTEM ALTITUDE NAME MULTIPLIER

OSSTMDX

1.000

SUPPLY FAN (CFM)	ELEC	DELTA-T	RETURN FAN (CFM)	ELEC (KW)	DELTA-T	OUTSIDE AIR RATIO		SENSIBLE (SHR)	HEATING CAPACITY (KBTU/HR)	COOLING EIR (BTU/BTU)	HEATING EIR (BTU/BTU)	
23580.	18.392	2.4	0.	0.000	0.0	0.200	918.407	0.682	-3287,053	0.00	0.00	
ZONE NAME		SUPPLY FLOW	EXHAUST FLOW	FAN (KW)	MINIMUM FLOW RATIO	OUTSIDE AIR FLOW	COOLING CAPACITY (KBTU/HR)	SENSIBLE (SHR)	EXTRACTION RATE (KBTU/HR)	HEATING CAPACITY (KBTU/HR)	RATE	
0LSTMDX		23580.	0.	0.000	1.000	4716.	0.00	0.00	509.33	0.00	-1463.14	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

REPORT- SV-A SYSTEM DESIGN PARAMETERS

1SSTMUH

WEATHER FILE- NEWARK, NJ

SYSTEM	м	ALTITUDE ULTIPLIER						* • • • • • • • • • • • • • • • • • • •					
1SSTMUH		1.000											
SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING		
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR		
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)		
13610.	0.000	0.2	0.	0.000	0.0	0.000	0.000	0.000	0.000	0.00	0.00		
					MINIMUM	OUTSIDE	COOLING	I	XTRACTION	HEATING	ADDITION		
ZONE		SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE		
NAME		FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER	
1STMUH		13610.	0.	0.803	1.000	0.	0.00	0.00	0.00	-698.82	-705.41	1.0	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

REPORT- SV-A SYSTEM DESIGN PARAMETERS

1SSTMDX

WEATHER FILE- NEWARK, NJ

												•	
	SYSTEM NAME	 M	ALTITUDE ULTIPLIER										
1SSTM	ОХ		1.000										
S	UPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING	
	FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR	
(1	CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	,
1	0240.	7.987	2.4	0.	0.000	0.0	0.150	390.751	0.689	-1387.821	0.00	0.00	
						MUMIMUM	OUTSIDE	COOLING	Ī	EXTRACTION	HEATING	ADDITION	
	ZONE		SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE	
	NAME		FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER
1STMD	x		10240.	0.	0.000	1.000	1536.	0.00	0.00	221.18	0.00	-530.84	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 WEATHER FILE- NEWARK, NJ REPORT- SV-A SYSTEM DESIGN PARAMETERS

SYSTEM ALTITUDE
NAME MULTIPLIER

2SSTMDX

2STMDX

1.000

SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING	
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR	
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	•
29420.	22.948	2.4	0.	0.000	0.0	0.150	1116.736	0.691	-3987.275	0.00	0.00	
					MINIMUM	OUTSIDE	COOLING	I	EXTRACTION	HEATING	ADDITION	
ZON	E	SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE	
NAM	E	FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER
TMDX		29420.	0.	0.000	1.000	4413.	0.00	0.00	635.47	0.00	-1525.13	1.0

REPORT- SV-A SYSTEM DESIGN PARAMETERS

WEATHER FILE- NEWARK, NJ

SYSTEM ALTITUDE NAME MULTIPLIER

3SSTMDX

3STMDX

1.000

SUPPLY FAN	ELEC	DELTA-T	RETURN FAN	ELEC	DELTA-T	OUTSIDE AIR		SENSIBLE	HEATING CAPACITY	COOLING EIR	HEATING EIR	
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	,
17170.	13.393	2.4	0.	0.000	0.0	0.150	652.451	0.690	-2327.040	0.00	0.00	
					MINIMUM	OUTSIDE	COOLING	F	XTRACTION	HEATING	ADDITION	
ZONI	E	SUPPLY	EXHAUST	FAN	FLOW	AIR	CAPACITY	SENSIBLE	RATE	CAPACITY	RATE	
NAM	E	FLOW	FLOW	(KW)	RATIO	FLOW	(KBTU/HR)	(SHR)	(KBTU/HR)	(KBTU/HR)	(KBTU/HR)	MULTIPLIER
STMDX		17170.	0.	0.000	1.000	2576.	0.00	0.00	370.87	0.00	-890.09	1.0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 REPORT- SV-A SYSTEM DESIGN PARAMETERS 4SSTMDXCLN WEATHER FILE- NEWARK, NJ _______ SYSTEM ALTITUDE
NAME MULTIPLIER

4SSTMDXCLN		1.000										
SUPPLY FAN (CFM)	ELEC	DELTA-T	RETURN FAN (CFM)	ELEC	DELTA-T	OUTSIDE AIR RATIO	COOLING CAPACITY (KBTU/HR)	SENSIBLE (SHR)		COOLING EIR (BTU/BTU)	EIR	
50000.	50.500	3.1	0.	0.000	0.0	0.200	2625.423	0.592	0.000	0.00	0.00	
ZON NAM		SUPPLY FLOW	EXHAUST FLOW	FAN (KW)	MINIMUM FLOW RATIO	OUTSIDE AIR FLOW	COOLING CAPACITY (KBTU/HR)	SENSIBLE	EXTRACTION RATE (KBTU/HR)	HEATING CAPACITY (KBTU/HR)	ADDITION RATE (KBTU/HR)	MULTIPLIER
4STMDXCLNR		50000.	0.	0.000	1.000	10000.	0.00	0.00	972.00	-864.00	-108.00	1.0

REPORT- SV-A SYSTEM DESIGN PARAMETERS 4SSTMDXOFC WEATHER FILE- NEWARK, NJ

SYSTEM NAME		ALTITUDE ULTIPLIER										
4SSTMDXOFC		1.000										
SUPPLY			RETURN			OUTSIDE	COOLING		HEATING	COOLING	HEATING	
FAN	ELEC	DELTA-T	FAN	ELEC	DELTA-T	AIR	CAPACITY	SENSIBLE	CAPACITY	EIR	EIR	
(CFM)	(KW)	(F)	(CFM)	(KW)	(F)	RATIO	(KBTU/HR)	(SHR)	(KBTU/HR)	(BTU/BTU)	(BTU/BTU)	•
6640.	5.199	2.4	0.	0.000	0.0	0.150	252.823	0.690	-899.770	0.00	0.00	

6640. 0. 0.000 1.000 996. 0.00 0.00 143.42 0.00 -344.22 1.0

FLOW

SUPPLY EXHAUST FAN

FLOW (KW)

FLOW

ZONE NAME

4STMOFFCLB

MINIMUM OUTSIDE COOLING EXTRACTION HEATING ADDITION

AIR CAPACITY SENSIBLE RATE CAPACITY RATE

RATIO FLOW (KBTU/HR) (SHR) (KBTU/HR) (KBTU/HR) (KBTU/HR) MULTIPLIER

REPORT- SS-D PLANT MONTHLY LOADS SUMMARY FOR DEFAULT-PLANT

		c c	N G -								E L E C		
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	T	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF I	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	734.49866	25 14	52.F	41.F	1902.798	-1347.132	5	21	15.F	12.F	-2945.473	276815.	707.161
FEB	689.95953	11 14	52.F	50.F	1947.922	-1197.829	20	3	10.F	7.F	-3142.490	250183.	706.495
MAR	880.38153	15 16	70.F	61.F	2406.023	-1145.207	5	1	29.F	24.F	-2291.763	286502.	706.461
APR	1036.69739	29 16	78.F	67.F	2896.074	-841.243	9	6	30.F	25.F	-2143.264	270995.	706.316
MAY	1283.01001	26 16	86.F	72.F	3639.623	-669.412	21	7	46.F	44.F	-1616.674	276518.	706.014
JUN	1616.68347	13 13	95.F	75.F	4159.959	-503.655	4	6	55.F	50.F	-1014.016	275700.	705.631
JUL	1785.26257	29 13	88.F	73.F	3977.014	-504.090	15	6	62.F	59.P	-850.181	271573.	705.631
JA	1824.01367	18 16	91.F	77.F	4362.844	-504.945	22	5	58.F	57.F	-971.342	286190.	705.631
SEP	1478.22900	20 12	80.F	75.F	3879.487	-517.335	26	6	50.F	46.F	-1149.482	270833.	705.720
OCT	1161.73364	17 15	75.F	65.F	3083.900	-671.035	25	6	41.F	36.F	-1659.976	271631.	705.904
NOV	932.02478	2 15	77.F	70.F	3342.014	-899.365	23	6	31.F	26.F	-1985.155	266124.	706.300
DEC	791.00671	2 14	64.F	53.F	2238.509	-1227.427	8	4	19.F	17.F	-2322.254	276776.	706.508
TOTAL	14213.462					-10028.692						3279762.	
MAX					4362.844						-3142.490		707.161

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX) 4CLN REHT&HTON24

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR OSSTMUH

			 -		E L E C								
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	т	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000				0.000	-112.613	5	20	15.F	12.F	-446.126	5924.	23.948
FEB	0.00000				0.000	-105.000	20	3	10.F	7.F	-395.889	5362.	23.643
MAR	0.00000				0.000	-101.294	5	1	29.F	24.F	-265.201	6284.	23.619
APR	0.00000				0.000	-60.669	9	4	32.F	27.F	-236.640	5776.	23.547
MAY	0.00000				0.000	-26.019	21	7		44.F	-190.399	5773.	23.471
JUN	0.00000				0.000	-0.083	1	5	63.F	55.F	-82.929	5861.	23.220
JUL	0.00000				0.000	0.000					0.000	5536.	23.220
A	0.00000				0.000	0.000					0.000	6107.	23.220
SEP	0.00000				0.000	0.000					0.000	5670.	23.220
OCT	0.00000				0.000	-11.518	25	6	41.F	36.F	-140.334	5556.	23.311
NOV	0.00000				0.000	-46.401	25	6	38.F	37.F	-206.371	5561.	23.511
DEC	0.00000				0.000	~95.696	6	19	30.F	26.F	-255.627	5894.	23.618
TOTAL	0.000					-559.292						69300.	
MAX					0.000						-446.126		23.948

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR OSSTMUH WEATHER FILE- NEWARK, NJ

		MUMIXAM		MAXIMUM		MAXIMUM		MAXIMUM	
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT	
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL	
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	
JAN	0.00000	0.000	-112.61273	-446.126	0.00000	0.000	0.00000	0.000	
FEB	0.00000	0.000	-104.99960	-395.889	0.00000	0.000	0.00000	0.000	
MAR	0.00000	0.000	-101.29436	-265.201	0.00000	0.000	0.00000	0.000	
APR	0.00000	0.000	-60.66871	-236.640	0.00000	0.000	0.00000	0.000	
MAY	0.00000	0.000	-26.01891	-190.399	0.00000	0.000	0.00000	0.000	
JUN	0.00000	0.000	-0.08293	-82.929	0.00000	0.000	0.00000	0.000	
	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
OCT	0.00000	0.000	-11.51841	-140.334	0.00000	0.000	0.00000	0.000	
NOV	0.00000	0.000	-46.40113	-206.371	0.00000	0.000	0.00000	0.000	
DEC	0.00000	0.000	-95.69556	-255.627	0.00000	0.000	0.00000	0.000	
						**			
TOTAL	0.000		-559.292		0.000		0.000		
MAX		0.000		-446.126		0.000		0.000	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 ST READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1

REPORT- SS-A SYS	TEM MONTHLY LOADS SUMMARY	FOR OSSTMDX	WEATHER	FILE-	NEWARK,	NJ

									E L E C				
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIM	E DRY-	WET-	COOLING	HEATING	T	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MA	X BULI	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY H	ir temi	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	0.00000				0.000	-424.663	19	5	14.F	12.F	-880.177	31571.	78.496
FEB	0.00000				0.000	-373.413	20	7	8.F	6.F	-957.488	28532.	78.496
MAR	0.10919	16 1	.5 67.1	50.F	45.509	-330.252	25	6	28.F	25.F	-715.535	32565.	78.496
APR	4.85594	15 1	.5 73.I	55.F	234.400	-195.398	9	7	30.F	25.F	-660.360	30889.	78.496
MAY	30.11234	10 1	.5 87.I	69.F	451.981	-94.774	3	6	39.F	33.F	-471.012	31571.	78.496
JUN	92.83858	13 1	.3 95.1	75.F	656.288	-17.941	4	6	55.F	50.F	-245.499	31386.	78.496
JUL	142.83754	12 1	.3 87.E	71.F	624.137	-2.114	15	6	62.F	59.F	-98.983	31074.	78.496
·	153.36879	18 1		' 77.F	730.743	-5.612	22	5	58.F	57.F	-180.556	32565.	78.496
SEP	78.25856	6 1		69.F	516.576	-13.869	27	6	48.F		-259.040	30889.	78.496
OCT	16.51519	17 1		' 65.F	353.148	-80.379	11	6	40.F	35.F	-408.051	31074.	78.496
NOV	2.23800	2 1	.5 77.E	' 70.F	262.428	-208.601	9	6	29.F	25.F	-584.202	30392.	78.496
DEC	0.07223	2 1	.4 64.F	' 53.F	36.576	-353.525	8	6	19.F	17.F	-756.611 	31571.	78.496
TOTAL	521.207					-2100.542						374066.	
MAX					730.743						-957.488		78.496

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

0SSTMDX _______

	ZONE CO	OLING	-ZONE HE	ATING-	B A S E B (DARDS	P R E - F	EAT
		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	-178.04318	-240.750	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	-159.78296	-240.750	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	-165.73660	-240.750	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	-123.67260	-240.750	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	-70.97748	-240.750	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	-14.39665	-196.853	0.00000	0.000
3	0.00000	0.000	0.00000	0.000	-1.69665	-79.436	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	-4.50082	-144.519	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	-11.11564	-207.168	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	-63.09883	-240.750	0.00000	0.000
NON	0.00000	0.000	0.00000	0.000	-134.81749	-240.750	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	-172.49670	-240.750	0.00000	0.000
TOTAL	0.000		0.000		-1100.344		0.000	
MAX		0.000		0.000		-240.750		0.000

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 1SSTMUH

												E L E C		
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM	
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	T	IME	DRY-	WET-	HEATING	TRICAL	ELEC	
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF I	MAX	BULB	BULB	LOAD	ENERGY	LOAD	
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)	
JAN	0.00000				0.000	-146.391	5	20	15.F	12.F	-703.103	4569.	18.638	
FEB	0.00000				0.000	-126.787	20	3	10.F	7.F	-600.042	4125.	18.276	
MAR	0.00000				0.000	-115.264	4	16	29.F	27.F	-406.593	4825.	18.267	
APR	0.00000				0.000	-51.534	9	4	32.F	27.F	-340.749	4415.	18.193	
MAY	0.00000				0.000	-22.072	2	22	50.F	39.F	-230.073	4424.	17.991	
JUN	0.00000				0.000	0.000					0.000	4501.	17.835	
JUL	0.00000				0.000	0.000					0.000	4252.	17.835	
AU	0.00000				0.000	0.000					0.000	4690.	17.835	
SEP	0.00000				0.000	-3.802	25	23	57.F	49.F	-90.354	4360.	17.924	
OCT	0.00000				0.000	-31.424	25	6	41.F	36.F	-270.992	4288.	18.017	
NOV	0.00000				0.000	-73.560	25	6	38.F	37.F	-348.284	4295.	18.213	
DEC	0.00000				0.000	-138.700	6	18	31.F	26.F	-416.965	4560.	18.314	
TOTAL	0.000					-709.534						53305.		
MAX					0.000						-703.103		18.638	

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR 1SSTMUH WEATHER FILE- NEWARK, NJ

		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	-146.39053	-703.103	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	-126.78695	-600.042	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	-115.26421	-406.593	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	-51.53436	-340.749	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	-22.07189	-230.073	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	-3.80157	-90.354	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	-31.42404	-270.992	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	-73.56000	-348.284	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	-138.69984	-416.965	0.00000	0.000	0.00000	0.000
mor: -			-709.534		0.000		0.000	
TOTAL	0.000		-707.534		0.000		0.000	
MAX		0.000		-703.103		0.000		0.000

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

1SSTMDX

													E L E C		
						MIXAM						MAXIMUM	ELEC-	MAXIMUM	
	COOLING	r	IME	DRY-	WET-	COOLING	HEATING	ı	IME	DRY-	WET-	HEATING	TRICAL	ELEC	
	ENERGY	OF	XAM	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD	
MONTH	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)	
JAN	0.07713	25	14	52.F	41.F	21.796	-77.661	19	5	14.F	12.F	-216.663	16722.	46.873	
FEB	0.37390	11	14	52.F	50.F	41.414	-62.654	20	7	8.F	6.F	-235.768	15114.	46.873	
MAR	3.60544	16	14	67.F	50.F	112.198	-42.990	25	6	28.F	25.F	-146.981	17363.	46.873	
APR	16.78626	21	14	80.F	62.F	172.141	-14.779	9	7	30.F	25.F	-128.313	16399.	46.873	
MAY	40.09307	10	15	87.F	69.F	239.649	-3.600	3	6	39.F	33.F	-75.075	16722.	46.873	
JUN	76.69411	13	13	95.F	75.F	294.077	-0.001	5	4	59.F	55.F	-0.412	16720.	46.873	
	89.18549		13		73.F	271.785	0.000					0.000	16401.	46.873	
AUG	84.33113	18	16	91.F	77.F	289.730	-0.027	22	5	58.F	57.F	-15.679	17363.	46.873	
SEP	50.85186	20	14	83.F	72.F	231.730	-0.519	27	6	48.F	46.F	-48.776	16399.	46.873	
OCT	17.04516	17	15	75.F	65.F	165.225	-8.702	11	6	40.F	35.F	-104.051	16401.	46.873	
NOV	7.39196	2	14	77.F	70.F	197.869	-34.639	9	6	29.F	25.F	-143.213	16079.	46.873	
DEC	0.68019	2	14	64.F	53.F	83.969	-64.555	8	6	19.F	17.F	-188.395	16722.	46.873	
TOTAL	387.116						-310.126						198416.		
MAX						294.077						-235.768		46.873	

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR 1SSTMDX

WEATHER FILE- NEWARK, NJ



		MAXIMUM		MUMIXAM		MAXIMUM		MOMIXAM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.0000	2 222	0.00000					
UAIN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JU	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000		0.000		0.000	
MAX		0.000		0.000		0.000		0.000

READING,

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1
DING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 2SSTMDX

	·	c o	o r i	N G -			н	EATI	NG-		E L	E C
					MAXIMUM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	145.87360	25 14	52.F	41.F	578.169	-0.010	17 6	16.F	14.F	-9.415	87286.	225.654
FEB	138.91960	11 14	52.F	50.F	581.270	-1.135	20 7	8.F	6.F	-64.599	78894.	225.654
MAR	191.02383	15 16	70.F	61.F	661.116	0.000				0.000	90664.	225.654
APR	222.28549	29 15	77.F	66.F	748.915	0.000				0.000	85615.	225.654
MAY	265.31262	26 16	86.F	72.F	828.226	0.000		٠		0.000	87286.	225.654
NUT	325.46805	13 13	95.F	75.F	878.494	0.000				0.000	87303.	225.654
JU	339.99118	19 14	85.F	74.F	874.793	0.000				0.000	85598.	225.654
AUG	356.23941	18 16	91.F	77.F	918.542	0.000				0.000	90664.	225.654
SEP	297.17816	20 12		75.F	882.966	0.000				0.000	85615.	225.654
OCT	239.78165	17 14		65.F	728.905	0.000				0.000	85598.	225.654
NOV	195.11839	2 15		70.F	811.208	0.000				0.000	83926.	225.654
DEC	161.84395	2 14	64.F	53.F	638.487	0.000				0.000	87286. 	225.654
TOTAL	2879.038					-1.145					1035801.	
MAX					918.542					-64.599		225.654

0.000

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

0.000

MAX

WEATURD RITE MEMARK MIT

REPORT- SS-B	SYSTEM MONTHLY	LOADS SUMMARY FO	DR ZSSTMDX	WEATHER FILE- NEWARK, NJ	
					-

	ZONE CO	OLING	-ZONE HE	ATING-	B A S E B O	A R D S	P R E - I	I E A T
		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MTHOM	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.0000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JIM	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOA	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000		0.000		0.000	

0.000

0.000

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 3SSTMDX

			- -		300111011				MENIMER FILE- P	NEWARK, NJ	
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	C O	OLI	N G			H E	ATI	N G		E L	E C
COOLING	TIME	DRY-		MAXIMUM COOLING	HEATING	TIME	DRY-	WET-	MAXIMUM HEATING	ELEC- TRICAL	MAXIMUM ELEC

					MAXIMUM						MAXIMUM	ELEC-	MANTHEMA
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	т	IME	DRY-	WET-	HEATING	TRICAL	MAXIMUM ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
											, , , , , , , , , , , , , , , , , , , ,	(337)	(KH)
JAN	77.37622	25 14	52.F	41.F	334.590	-0.315	10	6	19.F	17.F	-20.724	48432.	132.453
FEB	74.61213	11 14	52.F	50.F	336.978	-1.440	20	7	8.F	6.F	-49.951	43777.	132.453
MAR	103.42725	16 14	67.F	50.F	379.178	0.000					0.000	50409.	132.453
APR	121.93380	29 15	77.F	66.F	434.784	0.000					0.000	47539.	132.453
MAY	146.75310	26 14	83.F	71.F	480.741	0.000					0.000	48432.	132.453
JUN	182.10710	13 13	95.F	75.F	510.773	0.000					0.000	48528.	132.453
JUI	190.13220	19 14	85.F	74.F	509.947	0.000					0.000	47444.	132.453
AUG	199.60895	18 16	91.F	77.F	524.492	0.000					0.000	50409.	132.453
SEP	165.38913	20 12	80.F	75.F	513.124	0.000					0.000	47539.	132.453
OCT	131.77885	17 14	74.F	65.F	423.871	0.000					0.000	47444.	132.453
NOV	106.03567	2 15	77.F	70.F	472.374	0.000					0.000	46551.	132.453
DEC	86.39047	2 14	64.F	53.F	370.396	0.000	26	5	27.F	26.F	-0.164	48432.	132.453
TOTAL	1585.548												~~~~~
701171	100.040					-1.755						574954.	
MAX					524.492						-49.951		132.453

ENTECH ENGINEERING

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1

MAX

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

0.000

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

3SSTMDX

WEATHER FILE- NEWARK, NJ

0.000

0.000

-	-zone co	O L I N G	-ZONE HE	ATING-	B A S E B O	ARDS	P R E - H	E A T
		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000

						0.000	0.0000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JTT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOA	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000		0.000		0.000	

0.000

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 4SSTMDXCLN

		c c	OLI	NG-			-	нЕ	АТІ	NG -		E L	E C
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	T	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	500.26315	22 2	61.F	60.F	1106.007	-576.953	24	2	21.F	17.F	-872.075	67026.	137.539
FEB	464.38861	13 19	55.F	54.F	950.652	-520.138	20	7	8.F	6.P	-903.224	60563.	137.539
MAR	563.25409	15 16	70.F	61.F	1152.873	-552.842	25	5	28.F	24.F	-834.289	68474.	137.539
APR	641.08441	29 18	73.F	68.F	1367.235	-518.495	10	7	38.F	33.F	-827.410	65354.	137.539
MAY	758.34039	23 17	84.F	73.F	1540.904	-522.946	22	6	45.F	44.F	-807.529	67026.	137.539
JUN	879.61346	13 13	95.F	75.F	1624.603	-485.631	5	6	57.F	55.F	-775.239	66078.	137.539
	958.69739	19 16	88.F	74.F	1588.994	-501.976	5	6	62.F	57.F	-761.236	66302.	137.539
AUG	964.41534	18 16	91.F	77.F	1707.726	-499.306	22	5	58.F	57.F	-775.107	68474.	137.539
SEP	835.92218	20 12	80.F	75.F	1630.641	-499.145	26	6	50.F	46.F	-800.906	65354.	137.539
OCT	723.15112	31 17	65.F	65.F	1287.364	-538.966	11	6	40.F	35.F	-824.686	66302.	137.539
NOV	600.18353	2 13	76.F	70.F	1444.065	-534.818	14	6	31.F	27.F	-843.073	64630.	137.539
DEC	528.75989	2 16	65.F	52.F	1004.819	-569.150	8	6	19.F	17.F	-862.770	67026.	137.539
TOTAL	8418.079					-6320.369						792596.	
MAX					1707.726						-903.224		137.539

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR 4SSTMDXCLN

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ZONE COOL	INGZONE	HEATING -	BASEBOARDS	PRE-HEAT
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		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
HTMOM	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	-576.95331	-872.075	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	-520.13782	-903.224	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	-552.84204	-834.289	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	-518.49457	-827.410	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	-522.94629	-807.529	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	-485.63052	-775.239	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	-501.97604	-761.236	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	-499.30630	-775.107	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	-499.14542	-800.906	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	-538.96558	-824.686	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	-534.81830	-843.073	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	-569.15021	-862.770	0.00000	0.000	0.00000	0.000
TOTAL	0.000		-6320.369		0.000		0.000	
MAX		0.000	•	-903.224		0.000		0.000

WEATHER FILE- NEWARK, NJ

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 4SSTMDXOFC _____

		<u>.</u>	сo	o L I	N G -				нЕ	АТІ	N G		E L	E C
						MAXIMUM						MAXIMUM	ELEC-	MAXIMUM
	COOLING	т	IME	DRY-	WET-	COOLING	HEATING	т	IME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	10.90832	25	14	52.F	41.F	89.179	-8.528		6			-48.975	15285.	43.561
FEB	11.66591	11	14	52.F	50.F	95.229	-7.263	20	7	8.F	6.F	-63.643	13816.	43.561
MAR	18.96148	16	14	67.F	50.F	121.387	-2.564	27	5	33.F	28.F	-24.500	15919.	43.561
APR	29.75221	19	14	76.F	55.F	143.136	-0.368	10	6	36.F	31.F	-18.001	15006.	43.561
MAY	42.39846	26	14	83.F	71.F	174.839	0.000			•		0.000	15285.	43.561
JUN	59.96085	13	13	95.F	75.F	195.725	0.000					0.000	15323.	43.561
JU	64.41993	29	13	88.F	73.F	188.440	0.000					0.000	14967.	43.561
AUG	66.04947	19	14	87.F	75.F	192.594	0.000					0.000	15919.	43.561
SEP	50.62909	20	12	80.F	75.F	179.669	0.000					0.000	15006.	43.561
OCT	33.46150	17	14	74.F	65.F	145.125	-0.047	11	6	40.F	35.F	-12.152	14967.	43.561
NOV	21.05668	2	14	77.F	70.F	163.038	-1.346	14	6	31.F	27.F	-26.696	14689.	43.561
DEC	13.26033	2	14	64.F	53.F	113.413	-5.802	27	6	21.F	19.F	-42.900	15285.	43.561
						~								
TOTAL	422.524						-25.917						181474.	
MAX						195.725						-63.643		43.561

0.000

MAX

0.000

MARY FOR 4SSTMDXOFC

REPORT-	SS-B	SYSTEM	MOMIHLY	LOADS	SUMM
~					

WEATHER FILE- NEWARK, NJ

0.000

-	-ZONE CO	OLING	- ZONE HE	EATING -	B A S E B O	A R D S	P R E - H	E A T
		MAXIMUM		MUMIXAM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JIM	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
100	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000		0.000		0.000	

0.000

REPORT- PV-A EQUIPMENT SIZES

WEATHER FILE- NEWARK, NJ

	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER
EQUIPMENT	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD
	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL
STM-BOILER	3.174 1 1					
DHW-HEATER	0.000 1 1					
HERM-REC-CHLR	4.552 1 1					

REPORT- PS-D PLANT LOADS SATISFIED

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD

STM-BOILER	10303.9	100.0
DHW-HEATER	0.0	0.0
LOAD SATISFIED	10303.9	100.0
TOTAL LOAD ON PLANT	10303.9	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-REC-CHLR	15871.3	100.0
	==========	=======================================
LOAD SATISFIED	15871.3	100.0
TOTAL LOAD ON PLANT	15871.3	
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD

71 7 7 7 7 7 T T T T T T T T T T T T T T		
ELECTRICITY	21934.1	100.0
TOND CAMTCHING		
LOAD SATISFIED	21934.1	100.0
TOTAL LOAD ON PLANT	21934.1	

REPORT- PS-D PLANT LOADS SATISFIED

WEATHER FILE- NEWARK, NJ

(CONTINUED)------

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	10303.9	10303.9	0.000	0.000	0
COOLING LOADS	15871.3	15871.3	0.000	0.000	0
ELECTRICAL LOADS	21934.1	21934.1	0.000	0.000	0

REPORT- PS-H EQUIPMENT USE STATISTICS

EQUIPMENT	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
STM-BOILER	0.371	3.174	2 20 3	3.174 8760				
DHW-HEATER	0.000	0.000	0 0 0	0.000 0				
HERM-REC-CHLR	0.398	4.552	8 18 16	4.552 8760				

DEX	ENTECH E	NGINEERING PA 1960			OFTWARE DEVELOPM	HENT INC DOB-2.1D 7/ 2/1996 11:14:27 SDL RUN 1 FTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN RENT&HTON24
SR_1		HOURLY-REPORT		0.05 FT. POM	OUT MILK CLA	PAGE 1- 1
MMDDHH	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC LN	
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT PAN	OQ I
	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	DDI
	KW	KW	KW	KW	KW	90 1
						JC: 44 - 17
	(33)	(33)	(33)	(33)	(33)	EXISTING Off-REAK
MONTHLY	SUMMARY (JAN)				
MN	18.392	7.987	22.948	13.393	50.500	$\sim 10^{-1}$
MX	18.392	7.987	22.948	13.393	50.500	(1) LE-KEME
SM	9049.063	3929.703	11290.217	6589.162	24846.000	071 1211
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (PEB)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	8166.226		10188.731	5946.316	22422.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (MAR)				
MIN	18.392	7.987	22.948	13.393	50.500	
MIX	18.392	7.987	22.948	13.393	50.500	
SM	8607.644	3738.010	10739.474	6267.740	23634.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (APR)				
MIN	18.392		22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	8607.644		10739.475	6267.739	23634.000	
AV	18.392	7.987	22.948	13.393	50.500	•
MONTHLY	SUMMARY (MAY)				•
MN	18.392		22.948	13.393	50.500	
MX	18.392		22.948	13.393	50.500	
SM	9049.063		11290.217	6589.161	24846.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	Y SUMMARY (JUN)				
MN	18.392		22.948	13.393	50.500	
MX	18.392		22.948	13.393	50.500	
SM	8386.935		10464.104 22.948	6107.028 13.393	23028.000 50.500	
VA	18.392	. 7.987	22.748	13.393	30.300	
	Y SUMMARY				F0 F00	
MN	18.392		22.948	13.393	50.500	
MX	18.392		22.948	13.393	50.500	
SM	9269.771		11565.588	6749.873	25452.000	
AV	18.392	7.987	22.948	13.393	50.500	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11:14:27 SDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24 READING, PA 19603 PAGE 2- 1 SR_1 = HOURLY-REPORT 4SSTMDXC OSSTMDX 1SSTMDX 2SSTMDX 3SSTMDX TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN BLECTRIC BLECTRIC BLECTRIC BLECTRIC BLECTRIC KW KW KW KW KW ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) MONTHLY SUMMARY (AUG) 18.392 7.987 50.500 MN 22.948 13.393 7.987 22.948 50.500 MX 18.392 13.393 3738.010 10739.474 6267.739 8607.644 23634.000 ΑV 18.392 7.987 22.948 MONTHLY SUMMARY (SEP) 7.987 22.948 13.393 18.392 50.500 MN 18.392 22.948 7.987 13.393 50.500 SM 8607.644 3738.010 10739.475 6267.740 23634.000 AV 18.392 7.987 22.948 13.393 50.500 MONTHLY SUMMARY (OCT) 18.392 7.987 22.948 13.393 50.500 MN ΜX 18.392 7.987 22.948 13.393 50.500 SM 9269.771 4025.550 11565.588 6749.873 25452.000 AV 18.392 22.948 7.987 13.393 50.500 MONTHLY SUMMARY (NOV) 7.987 MN 18.392 22.948 13.393 50.500 MX 18.392 7.987 22.948 13.393 50.500 8828.353 3833.857 11014.846 A٧ 18.392 7.987 22.948 13.393 50.500 MONTHLY SUMMARY (DEC) 18.392 7.987 22.948 13.393 50.500 7.987 MX 18.392 22.948 13.393 50.500 6589.162 9049.062 3929.703 11290.217 24846.000 SM ΑV 18.392 7.987 22.948 13.393 YEARLY SUMMARY 7.987 22.948 MN 18.392 13.393 50.500 7.987 22.948 13.393 18.392 50.500 SM 105498.813 45814.586 131627.406 76819.984 289668.000 AV 18.392 7.987 22.948 13.393 50.500

ENTECH ENGINEERING DING, PA 19603 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PV-A BQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

HERM-REC-CHLR

EZDOE - BLITE SOFTWARE DEVELOPMENT INC

DOB-2.1D 7/2/1996

11:14:27 PDL RUN 1

NUMBER NUMBER
THETO SIZE INSTD
THE AVAIL NUMBER NUMBER
SIZE INSTD NUMBER NUMBER
NUMBER NUMBER
NUMBER NUMBER
NUMBER NUMBER
NUMBER NUMBER NUMBER NUMBER NUMBER
INSTD SIZE INSTD SIZE INSTD NUMBER EQUIPMENT SIZE INSTD (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL STM-BOILER 3.174 1 1 DHW-HEATER 0.000 1 1 4.552 1 1

HNTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:14:27 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
COM POTT OR	10101 0	
STM-BOILER	10303.9	
DHW-HEATER	0.0	0.0
	******	************
LOAD SATISFIED	10303.9	100.0
TOTAL LOAD ON PLANT	10303.9	100.0
TOTAL BOAD ON PLANT	10303.9	
2007 TW2 1 0 1 D	10000	
COOLING LOADS	WRIG SOPPLIED	PCT OF TOTAL LOAD

HERM-REC-CHLR	15871.3	100.0
LOAD SATISFIED	15871.3	100.0
TOTAL LOAD ON PLANT	15871.3	
	25072.5	
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
BLECTRICITY	21934.1	100.0
		375555666666655555555
LOAD SATISFIED	21934.1	100.0
TOTAL LOAD ON PLANT	21934.1	

BNTECH BNGINBERING READING, PA 19603 REPORT- PS-D PLANT LOADS SATISFIED

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	10303.9	10303.9	0.000	0.000	o
COOLING LOADS	15871.3	15871.3	0.000	0.000	0
RIRCTRICAL LOADS	21934.1	21934.1	0.000	0.000	0

ENTECH ENGINEERING BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 2/1996 11:14:27 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PS-H BQUIPMENT USB STATISTICS WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					
BQUIPMENT	OPER RATIO	LOAD (MBTU)	DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
STM-BOILER	0.371	3.174	2 20 3	3.174 8760				
DHW-HEATER	0.000	0.000	0 0 0	0.000 0				
HERM-REC-CHLR	0.398	4.552	8 18 16	4.552 8760				

ENTECH ENGINEERING BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:14:27 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOBBO-STM (UHLAHU W/DX) 4CLN REHTEHTON24
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE - NEWARK, NJ

ENERGY TYPE IN SITE METU -	ELECTRICITY	FUBL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	582.98	15721.18	0.00
SPACE COOL	8734.99	0.00	0.00
HVAC AUX	4965.52	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	3040.82	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	4610.08	0.00	0.00
TOTAL	21934.39	15721.18	0.00

TOTAL SITE ENERGY 37655.27 METU 318.3 KETU/SQFT-YR GROSS-AREA
TOTAL SOURCE ENERGY 81589.31 METU 689.7 KETU/SQFT-YR GROSS-AREA

318.3 KBTU/SQFT-YR NET-ARBA 689.7 KBTU/SQFT-YR NET-ARBA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOR-2.1D 7/2/1996 11:14:27 PDL RUN 1 ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UHEAHU W/DX) 4CLN REHTEHTON24 RRADING. PA PR_1 - HOURLY-REPORT PAGE 1- 1 ______ HERM-REC STM-BOIL STM-BOIL HERM-REC HERM-REC MMDDHH -CHLR -CHLR -CHLR LOAD RLECTRIC CONDENSE LOAD BLECTRIC USB FAN RLRC USR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----(3) ----(18) ----(1) ---(3) ----(1) MONTHLY SUMMARY (JAN) 415125. 1262853. 69826. MN 691875. 553860. 1006540. 682813. 2976898. 69826. 1776538 MX 377932192. 281947008. 974971008. 34354464. SM 478364480. 972286. AV 768155. 573063. 1981648. 69826 MONTHLY SUMMARY (FEB) 506556. 379776. 1151333. 69826. 632960. MN 1413205. 953701. 682813. 3173915. 69826. 258160144. 892538304. 31002810. SM 438156896. 346102944. 581442. 2010221. 69826. 779511. ΔV 986840. MONTHLY SUMMARY (MAR) 1053380. 69826. 908338. 727898 545003. 682813. 2323188. 69826. 1024457. MX 1901428. 404728928. 300986720. 826835776. 32678638. SM 517894272. AV 864805. 643134. 1766743. 69826. 1106612. MONTHLY SUMMARY (APR) 751183. 562359. 747265. 65759. 937265. MN 2109139. 1059606. 682813. 2174689. 69826. 635568704. 316353888. 32663578. 438190752. SM 629455552 1358053. 69794. 936305. AV 1344991. MONTHLY SUMMARY (MAY) 874349. 654077. 704509. 61997. 1090128. MN 2899371. 1210732. 682813. 1648098. 69826. ΜX 789316544. 485240512. 335833568 511592896. 33919784 986261. 682589. 1039823. 68943. ΑV 1604302. MONTHLY SUMMARY (JUN) 1384177. 949434 682813. 701395. 61723. 1045441. MX 3163240. 1274939. 682813. 69826. 311362752. 364100672. 30655348. 927032768. SM 2032967. 1057655. 682813. 798466. 67227. MONTHLY SUMMARY (JUL) 703557. 1542191. 972581. 682813 61913. 881605. 69826. 1275740. 682813. MX 3262543. 551956416. 344137792. 381745984. 33474764. SM 1128647808. 2239381. 1095152. 682813. 757433. 66418.

	ENTECH	ENGIN	BERING	EZDOE - ELI	TE SOFTWARE DEV	DEVELOPMENT INC	DOR-2.1D 7/2/1996 11:14:27 PDL RUN 1
REA	DING,	PA	19603	4130.05 FT.	MONMOUTH - MYE	R CENTER, NJ	PTMOBBO-STM (UHSAHU W/DX) 4CLN REHTSHTON24
PR_1		= HOU	RLY-REPORT				PAGE 2- 1
	HERM-RE	C.	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL	
	-CHLR	_	-CHLR	-CHLR	BR	ER.	
	LOAD		BLECTRIC	CONDENSE	LOAD	BLECTRIC	
			USB	DAM DIDC		USB	
	BTU/HR		BTU/HR	BTU/HR	BTU/HR	BTU/HR	
	(1	.)	(3)	(18)	(1)	(3)	
MONTHLY	SUMMARY	(AUG)					
MIN	1432	806.	956579.	682813.	655344.	57670.	
MX	3592	429.	1322721.	682813.	1002767.		
SM	1034400	000.	507029920.	682813. 319556512.	360379136.	31248418.	
AV				682813.		66770.	
MONTHLY	SUMMARY	(SEP)					
MN	1217	109.	924744.	682813.	719861.	63348	
MX	2931	510.	1223276.	682813.			
SM	904879			319556512.	379770752.	31949278	
AV	1933		1035288.			68268.	
MONTHLY	SUMMARY	(OCT)					
MN	1043	358.	836645.	626015.	745039.	65563.	
MX			1139826.		1691400.		
SM	753210				521949024.	35091444.	
AV	1494	466.	965808.	682150.			
MONTHLY	SUMMARY	(NOV)					
MN	892	407.	715077.	535444.	731343.	64358.	
MX	2334	289.	1100857.	535444. 682813.	2016580.		
SM	593284	160.	435893920.	319190752.		33483558.	
AV	1236	009.	908112.	664981.		69757.	
MONTHLY	SUMMARY	(DRC)					•
MN	N 739836		592389.	443902.	925172.	69826.	•
MX		367.	972169.	682813.	2353679.		
SM	512530	048.	972169. 400700064.	298113696.		34354464.	
AV	1041	728.	814431.		1826424.	69826.	
YEARLY S	SUMMARY						
MN	632	960.	506556.	379776.	655344.	57670.	
MX	3592429.		1322721.	682813.	3173915.	69826.	
SM	8707173	376.	5401348096.	3749003264.	7431395840.	394876544.	
AV	1517	987.	941658.	653592、	1295571.	68842.	

REA SR_1		PA 196 HOURLY-REPOR	03 413	U.US FT. MON	MOUTH - MIER C	RNTER, NJ FTMOBBO-STM(UH£AHU W/DX)4CLN REHT£HTON24 PAGE 1- 1
MDDHH	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC	-
	TOT FAN ELECTRIC	TOT FAN BLECTRIC	TOT FAN BLECTRIC	TOT FAN BLECTRIC	TOT FAN BLECTRIC	BBI Exisme
	KW	KW	KW	KW	KW	PP '
	(33)	(33)	(33)	(33)	(33)	BBI EXISTRAL
MONTHL	SUMMARY (J	AN)				0/0 . 7 110
MN	18.392	7.987	22.948	13.393	50.500	•
MX	18.392	7.987	22.948	13.393	50.500	
SM	4634.884	2012.775	5782.794	3374.935	12726.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	SUMMARY (F	RB)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	4193.466	1821.082	5232.052	3053.513	11514.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	SUMMARY (M	AR)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	5076.302	2204.468	6333.536	3696.357	13938.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	SUMMARY (A)	PR)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	4634.884	2012.775	5782.794	3374.935	12726.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	SUMMARY (M	AY)				•
MN	18.392	7.987	22.948	13.393	50.500	•
MX.	18.392	7.987	22.948	13.393	50.500	
SM	4634.884	2012.775	5782.794	3374.935	12726.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL:	SUMMARY (J	UN)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	4855.593	2108.621	6058.165	3535.646	13332.000	
VA	18.392	7.987	22.948	13.393	50.500	
	SUMMARY (J					
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	4414.175	1916.928	5507.423	3214.224	12120.000	•
AV	18.392	7.987	22.948	13.393	50.500	

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 10: 7:40 SDL RUN 1 READING, 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UHGAHU W/DX) 4CLN REHTGHTON24 PA SR_1 - HOURLY-REPORT PAGE 2- 1 OSSTMDX 1SSTMDX 2SSTMDX 3SSTMDX 4SSTMDXC LN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN BLECTRIC BLECTRIC BLECTRIC BLECTRIC BLECTRIC KW ----(33) ---- (33) ---- (33) ---- (33) ---- (33) MONTHLY SUMMARY (AUG) 18.392 7.987 22.948 13.393 50.500 7.987 MX 18.392 22.948 13.393 50.500 6333.536 SM 5076.302 2204.468 3696,357 13938.000 AV 7.987 22.948 18.392 13.393 50.500 MONTHLY SUMMARY (SEP) 18.392 7.987 22.948 13.393 50.500 MX 18.392 7.987 22.948 13.393 50.500 5782.794 2012.775 3374.935 12726.000 SM 4634.884 AV 18.392 7.987 22.948 13.393 50.500 MONTHLY SUMMARY (OCT) 7.987 22.948 13.393 MNI 18.392 50.500 18.392 7.987 22.948 MX 13.393 50.500 4414.175 1916.928 5507.423 3214.224 12120.000 ΑV 18.392 7.987 22.948 13.393 50.500 MONTHLY SUMMARY (NOV) 18.392 7.987 22.948 13.393 MN 50.500 MX 18.392 7.987 22.948 13.393 50.500 5507.423 SM 4414.175 1916.928 3214 224 12120.000 22.948 13.393 AV 18.392 7.987 50.500 MONTHLY SUMMARY (DEC) 7.987 22.948 13.393 MN 18.392 50.500 18.392 7.987 22.948 13.393 MX 50.500 2012.775 5782.794 3374.935 12726.000 4634.884 ΑV 18.392 7.987 22.948 13.393 YEARLY SUMMARY 18.392 7.987 22.948 13.393 MX 18.392 7.987 22.948 13.393 50.500 SM 55618.609 24153.299 69393.523 40499.219 152712.000 AV 18.392 7.987 22.948 13.393 50.500

ENTECH ENGINEERING

ENTECH ENGINEERING READING, PA 19603 REPORT- PV-A EQUIPMENT SIZES

ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10: 7:40 PDL RUN 1 PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOHBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24

WEATHER FILE- NEWARK, NJ

NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD BQUIPMENT (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL

3.174 1 1 STM-BOILER DHW-HEATER 0.000 1 1 HERM-REC-CHLR 4.552 1 1 ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10: 7:40 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ

HRATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD

STM-BOILER	10303.9	100.0
DHW-HEATER	0.0	0.0
	**********	************
TOND CATTERIOD	10303.9	100.0
TOTAL LOAD ON PLANT	10303.9	100.0
TOTAL BOAD ON FLANT	10303.9	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-REC-CHLR	15871.3	100.0

	15871.3	100.0
TOTAL LOAD ON PLANT	15871.3	
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
ELECTRICITY	21934.1	100.0

LOAD SATISBIRD	21934.1	100.0
TOTAL LOAD ON PLANT	21934.1	100.0
TOTAL BOAD ON FLANT	21734.1	

ENTECH ENGINEERING
READING, PA 19603
REPORT- PS-D PLANT LOADS SATISFIED

BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10: 7:40 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24 WEATHER FILE- NEWARK, NJ (CONTINUED) ------

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED	
HEATING LOADS	10303.9	10303.9	0.000	0.000	0	
COOLING LOADS	15871.3	15871.3	0.000	0.000	0	
BLECTRICAL LOADS	21934.1	21934.1	0.000	0.000	0	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10: 7:40 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOBBO-SIM (UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PS-H EQUIPMENT USE STATISTICS
WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					*************
EQUIPMENT	OPER RATIO	LOAD (MBTU)	DAY HE	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
STM-BOILER	0.371	3.174	2 20 3	3.174 8760				
DHW-HEATER	0.000	0.000	0 0 0	0.000 0				
HERM-REC-CHLR	0.398	4.552	8 18 16	4.552 8760				

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10: 7:40 PDL RUN 1
DING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24 READING, PA 19603 4130.05 FT.
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	RLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	582.98	15721.18	0.00
SPACE COOL	8734.99	0.00	0.00
HVAC AUX	4965.52	0.00	0.00
DOM HOT WIR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	3040.82	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	4610.08	0.00	0.00
TOTAL	21934.39	15721.18	0.00

TOTAL SITE ENERGY 37655.27 MBTU 318.3 KBTU/SQFT-YR GROSS-AREA 318.3 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 81589.31 MBTU 689.7 KBTU/SQFT-YR GROSS-AREA 689.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 10: 7:40 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBEO-STM (UHGAHU W/DX) 4CLN REHTEHTON24 - HOURLY-REPORT PR_1 PAGE 1- 1 HERM-REC HERM-REC HERM-REC STM-BOIL STM-BOIL MMDDHH -CHLR -CHLR -CHLR RR LOAD BLECTRIC CONDENSE LOAD BLECTRIC FAN RLEC USE USR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----(1) ---(3) ----(18) ----(1) ---(3) MONTHLY SUMMARY (JAN) 1090060. 874295. 654036. 863170. 69826. MN 2092040. 1051559. 682813. 2574966. 69826. ΜX SM 396929760. 246212368. 172026960 395541120. 17596188. AV 1575118. 977033. 682647. 1569608. 69826. MONTHLY SUMMARY (FEB) 1066818. 855555. 640091. 927113. 69826. MX 2137164. 1057932. 682813. 2179558. 69826. 225648704. 155638624. 326407872. 15920361. SM 378973952. 1662167. 989687. 682626. 1431614. 69826. AV MONTHLY SUMMARY (MAR) MN 1409930. 953220 682813. 606995. 53416. 2595265. 1132922. 682813. 2029272. MX 69826. 503283328. 279652096. 188456384. 341751648. 19098404. SM ΑV 1823490. 1013232. 682813. 1238231. 69197. MONTHLY SUMMARY (APR) 964636. 682813. 574664. 50570. 1487801. MN MX 3085316. 1226198. 682813. 1702598. 69826. 543496640. 268037312. 172068864. 228300048. 16277278. ΑV 2156733. 1063640. 682813. 905953. 64592. MONTHLY SUMMARY (MAY) 1663845. 990265. 682813. 567689. 49957. MX 3828865. 1365767. 682813. 1323294. 69826. 283589248. 15047886. 172068864. 181199008. 634489920. SM 1125354. 682813. AV MONTHLY SUMMARY (JUN) 2060614. 1047111. 682813. 560475. 49322. MN 4349201. 1502434. 682813. 725163. 63814. SM 825904000. 324826144. 180262624. 162180864. 14271916. 1230402. AV 3128424. 682813. 614321. 54060. MONTHLY SUMMARY (JUL) MN 2249004. 1077488. 682813. 559788. 49261. 1432733. 682813. 58535. 665167. MX 4166256. 797411840. 303306304. 163875104. 145724320. SM ΑV 3322549. 1263776. 682813. 607185. 53432.

	DING, I					FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24
PR_1	= I	OURLY-REPORT				PAGE 2-
	HERM-REC	HERM-REC	HBRM-RBC	STM-BOIL	STM-BOIL	***************************************
	-CHLR	-CHLR	-CHLR	RR RR	BR BOIL	
	LOAD	BLECTRIC	CONDENSE	LOAD	BLECTRIC	
	DOAD		FAN BLEC	BOAD	USB	
	BTU/HR		BTU/HR	BTU/HR	BTU/HR	
	BIU/AR	BIU/IR	BIO/AR	BIU/RK	BIU/HR	
	(1)	(3)	(18)	(1)	(3)	
MONTHLY	SUMMARY (AU	JG)				
MN	2200348					
MX	4552086	5. 1491854.	682813.	686967.	60453.	
SM	93040947	2. 350816256.	188456384.	167946592.	14779300.	
AV	3371049	9. 1271073.	682813.	608502.	53548.	
MONTHLY	SUMMARY (S)	3P)				
MN	184037	2. 1015714.	682813.	551735.	48553.	
MX	406872				69826.	
SM	70960460	3. 293925536.		160190304.		
AV	281589	1. 1166371.	682813.	635676.	55879.	
MONTHLY	SUMMARY (O	CT)				
MN	163972	3. 986768.	682813.	595594.		
MX	327314	3. 1241670.	682813.	1284848.	69826.	
SM	54931859		163875104.	172466240.	14611193.	
AV	228882	B. 1080609.	682813.	718609.	60880.	
MONTHLY	SUMMARY (N	ov)				
MN	142452	7. 955364.	682813.	586544.	51616.	
MX		5. 1284191.	682813.		69826.	
SM	47499398		163875104.		16093686.	
AV	197914	2. 1036601.	682813.	994369.	67057.	
MONTHLY	SUMMARY (D	BC)				
MIN	121958	5. 925111.	682813.	624499.	54956.	•
MX	242775	1. 1098571.	682813.	1991260.	69826.	
SM	41927344	0. 249506352.	172068864.			
AV	166378	4. 990105.	682813.	1397646.	69497.	
YEARLY	SUMMARY					
MN	106681	8. 855555. 6. 1502434.	640091.	551735. 2574966.	48553.	
MX	455208	6. 1502434.	682813.	2574966.	69826.	
SM	716408934	4. 3333650688.	2064741632.	2872563456.	188114656.	
AV	236907	7. 1102398.	682785.	949922.	62207.	

```
$EZ-DOE LOADS INPUT$
                    $ GENERAL PROJECT DATA
TITLE LINE-1 *
                       ENTECH ENGINEERING
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
                   READING, PA
       LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
      LINE-5 *FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH * ..
ABORT
                   ERRORS
DIAGNOSTIC
                  WARNINGS ..
LOADS-REPORT
                  VERIFICATION=(LV-A, LV-B)
                   SUMMARY=(LS-C,LS-D,LS-F) ...
BUILDING-LOCATION ALTITUDE = 15.
                  X-REF = 0.0
                   Y-REF = 0.0
RUN-PERIOD
                   JAN 1 1994 THRU DEC 31 1994 ...
                    $ SCHEDULES
          =DAY-SCHEDULE (1,24) (1.) ..
   FULON
                         (1,6) (0.)
DWKFULON12 =DAY-SCHEDULE
                          (7,18) (1.)
                          (19,24) (0.) ...
D24FULOFF =DAY-SCHEDULE (1,24) (0.) ..
                         (1,6) (0.07)
DOCCUP01 = DAY-SCHEDULE
                          (7,8) (0.7,0.9)
                          (9,14) (1.)
                          (15,18) (0.9,0.7,0.25,0.15)
                          (19,24) (0.07) ...
d24occofhr =DAY-SCHEDULE (1,24) (0.07) ...
DWKLITE1
         =DAY-SCHEDULE
                          (1,6) (0.1)
                          (7,8) (0.5,0.9)
                          (9,14) (1.)
                          (15,18) (0.9,0.7,0.25,0.15)
                          (19,24) (0.1) ...
                         (1,24) (0.1) ...
DNOTLITE1 =DAY-SCHEDULE
DINFILWIN1 =DAY-SCHEDULE (1,24) (0.8) ..
   FILSUM1 =DAY-SCHEDULE
                         (1,24) (0.8) ...
                          (1,7) (0.15)
DEQPAWKDAY = DAY-SCHEDULE
                          (8,19) (0.5)
                          (20,24) (0.15) ...
```

DEQPAWKEND	=DAY-SCHEDULE	(1,24)	(0.15)
W21FULON7D	=WEEK-SCHEDULE	E (ALL)	D24FULON
WOCC01	=WEEK-SCHEDULE		DOCCUP01 d24occofhr
WLITE1	=WEEK-SCHEDULE	•	DWKLITE1 DNOTLITE1
WINFILWIN1	=WEEK-SCHEDULE	E (ALL)	DINFILWIN1
WINFILSUM1	=WEEK-SCHEDULE	E (ALL)	DINFILSUM1
WEQUIPA	=WEEK-SCHEDULE		DEQPAWKDAY DEQPAWKEND
	ON 7D/WK WK1 =SCHEDULE THRU	J DEC 31	W24FULON7D
•	CCUP SCH 01 =SCHEDULE THRU	J DEC 31	WOCC01
	NG SCH 1/.1 =SCHEDULE THRU	J DEC 31	WLITE1
FIL1	=SCHEDULE THRU	J OCT 15	WINFILWIN1 WINFILSUM1 WINFILWIN1
	QUIP A .50/.19 =SCHEDULE THRU		WEQUIPA
	\$ COI	ISTRUCTI	ON TYPES
\$ ROOF CON ROOFCON1 =0	11 MAIN ROOF CONSTRUCTION	U-VALUE	= 0.100
•	N WAL1 TYP CONSTRUCTION	U-VALUE	= 0.080
•	N WALL 1 TYP CONSTRUCTION		= 0.480 TANCE = 0.000
	R DOOR TYP 01 TOONSTRUCTION		= 0.400
\$ UNDERGRN UWAL1 =0	ID WALL 1 CONSTRUCTION		= 0.100 TANCE = 0.500

GLTYP1 =GLASS-TYPE SHADING-COEF = 0.560 PANES = 1

GLASS-CONDUCTANCE = 0.520 ...

S SPACE DESCRIPTION

1LDXHT = SPACE AREA = 16950.0 VOLUME = 283065.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 10.0

INF-METHOD = NONE

E-W HEIGHT = 22.3 WIDTH = 356.0 CONS = EXWAL1

AZIMUTH = 135 ..

WINDOW HEIGHT = 2.7 WIDTH = 288.4 G-T = GLTYP1 ..

E-W HEIGHT = 22.3 WIDTH = 266.0 CONS = EXWAL1

AZIMUTH = 315 ..

WINDOW HEIGHT = 2.7 WIDTH = 215.5 G-T = GLTYP1 ..

E-W HEIGHT = 22.3 WIDTH = 71.0 CONS = EXWAL1

AZIMUTH = 90

WINDOW HEIGHT = 2.7 WIDTH = 57.5 G-T = GLTYP1 ..

1LDXNOHT =SPACE AREA = 9601.0 VOLUME = 160336.7

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0
LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
EOUIP-SCHEDULE = YEOUIPSCHA EOUIPMENT-W/SOFT = 10.0

INF-METHOD = NONE .

E-W HEIGHT = 22.3 WIDTH = 113.0 CONS = EXWAL1

AZIMUTH = 315.

WINDOW HEIGHT = 2.7 WIDTH = 91.5 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 25.0 CONS = EXWAL1

AZIMUTH = 225 ..

WINDOW HEIGHT = 2.7 WIDTH = 20.3 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 42.0 CONS = EXWAL1

AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 34.0 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 10.0 CONS = EXWAL1

WINDOW HEIGHT = 2.7 WIDTH = 8.1 G-T = GLTYP1 ...

=SPACE AREA = 21192.0 VOLUME = 204927.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 10.0

INF-METHOD = NONE ..

3LDX =SPACE AREA = 14457.0 VOLUME = 139800.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 10.0

INF-METHOD = NONE ..

4LDX

=SPACE AREA = 35153.0 VOLUME = 339930.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 5.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 10.0

INF-METHOD = NONE ..

ROOF HEIGHT = 817.5 WIDTH = 100.0 CONS = ROOFCON1 TILT = 0 ...

AREA = 25161.0 VOLUME = 421464.0

TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED

PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0

PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0

LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 2.0

LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1

EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 0.7

INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0

INF-SCHEDULE = YINFIL1 ...

E-W HEIGHT = 22.3 WIDTH = 192.0 CONS = EXWAL1 AZIMUTH = 45 ..

WINDOW HEIGHT = 2.7 WIDTH = 155.5 G-T = GLTYP1 ..

E-W HEIGHT = 22.3 WIDTH = 96.0 CONS = EXWAL1 AZIMUTH = 315 ...

WINDOW HEIGHT = 2.7 WIDTH = 77.8 G-T = GLTYP1 ...

E-W HEIGHT = 22.3 WIDTH = 155.0 CONS = EXWAL1 AZIMUTH = 270 ..

```
WINDOW HEIGHT = 2.7 WIDTH = 125.6 G-T = GLTYP1 ...
                      HEIGHT = 22.3 WIDTH = 103.0 CONS = EXWAL1
             E-W
                      AZIMUTH = 225 ...
               WINDOW HEIGHT = 2.7 WIDTH = 83.4 G-T = GLTYP1 ...
             E-W
                      HEIGHT = 22.3 WIDTH = 60.0 CONS = EXWAL1
                      AZIMUTH = 135 ..
               WINDOW HEIGHT = 2.7 WIDTH = 48.6 G-T = GLTYP1 ..
             E-W
                      HEIGHT = 22.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 270 ..
               WINDOW HEIGHT = 2.7 WIDTH = 20.0 G-T = GLTYP1 ...
             E-W
                      HEIGHT = 22.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 225
               WINDOW HEIGHT = 2.7 WIDTH = 20.0 G-T = GLTYP1 ...
                    AREA = 250.0 VOLUME = 4189.0
03LHWELV =SPACE
                    MULTIPLIER = 4.0 TEMPERATURE = (73.)
                    ZONE-TYPE = CONDITIONED PEOPLE-SCHEDULE = YOCC01
                    AREA/PERSON = 294.0 PEOPLE-HG-LAT = 200.0
                    PEOPLE-HG-SENS = 250.0 LIGHTING-TYPE = REC-FLUOR-RV
                    LIGHTING-W/SQFT = 2.0 LIGHT-TO-SPACE = 1.0
                    LIGHTING-SCHEDULE = YLITE1
                    EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 0.7
                    INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
                    INF-SCHEDULE = YINFIL1
             E-W
                      HEIGHT = 15.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 270 ..
             E-W
                      HEIGHT = 15.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 225
4LHWELV =SPACE
                    AREA = 250.0 VOLUME = 2438.0
                    TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
                    PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
                    PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
                    LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 2.0
                    LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
                    EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SOFT = 0.7
                    INF-METHOD = AIR-CHANGE AIR-CHANGES/HR = 1.0
                    INF-SCHEDULE = YINFIL1
                                            . .
             E-W
                      HEIGHT = 15.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 270 ..
             E-W
                      HEIGHT = 15.3 WIDTH = 40.0 CONS = EXWAL1
                      AZIMUTH = 225 ..
                      HEIGHT = 25.0 WIDTH = 10.0 CONS = ROOFCON1
             ROOF
                      TILT = 0
```

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=SPACE
                    AREA = 1872.0 VOLUME = 18720.0
OLDXHT
                    TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
                    PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
                    PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
                    LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SOFT = 4.0
                    LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
                    EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 5.0
                    INF-METHOD = AIR-CHANGE INF-SCHEDULE = YINFIL1
                      HEIGHT = 14.0 WIDTH = 48.0 CONS = EXWAL1
             F-W
                      AZIMUTH = 90 ..
               WINDOW HEIGHT = 2.7 WIDTH = 38.4 G-T = GLTYP1 ...
                     HEIGHT = 39.0 WIDTH = 96.0 CONS = UWAL1 ...
            W-U
                    AREA = 2847.0 VOLUME = 28470.0
OLDXONLY
        =SPACE
                    TEMPERATURE = (73.) ZONE-TYPE = CONDITIONED
                    PEOPLE-SCHEDULE = YOCC01 AREA/PERSON = 294.0
                    PEOPLE-HG-LAT = 200.0 PEOPLE-HG-SENS = 250.0
                    LIGHTING-TYPE = REC-FLUOR-RV LIGHTING-W/SQFT = 4.0
                    LIGHT-TO-SPACE = 1.0 LIGHTING-SCHEDULE = YLITE1
                    EQUIP-SCHEDULE = YEQUIPSCHA EQUIPMENT-W/SQFT = 5.0
                    INF-METHOD = NONE
                      HEIGHT = 14.0 WIDTH = 73.0 CONS = EXWAL1
             E-W
                      AZIMUTH = 315
               WINDOW HEIGHT = 2.7 WIDTH = 73.0 G-T = GLTYP1 ...
                  HEIGHT = 39.0 WIDTH = 73.0 CONS = UWAL1 ...
            II-W
END
COMPUTE LOADS
INPUT SYSTEMS
                 $ E Z - D O E SYSTEMS INPUT$
                    S GENERAL PROJECT DATA
                      ENTECH ENGINEERING
TITLE LINE-1 *
       LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
       LINE-3 *
                   READING, PA
                                         19603
       LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
       LINE-5 *FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH * ..
                  ERRORS
                  WARNINGS ..
   GNOSTIC
SYSTEMS-REPORT
                  VERIFICATION=(SV-A)
                  SUMMARY=(SS-A, SS-B, SS-D, SS-F, SS-K)
```

REPORT-FREQUENCY = MONTHLY ..

S SCHEDULES

```
DS24ON1 =DAY-SCHEDULE
DS24OFF0 =DAY-SCHEDULE
                          (1,24) (1.) ...
                          (1,24) (0.) ...
   MPNOHT =DAY-SCHEDULE (1,24) (55.) ..
                          (1,24) (90.) ...
   MPNOCL =DAY-SCHEDULE
                          (1,24) (72.) ...
DSHTSET1 =DAY-SCHEDULE
DSCLGSET1 =DAY-SCHEDULE
                          (1,24) (75.) ..
                           (1,24) (70.) ...
DSHTSET270 =DAY-SCHEDULE
OFFPK SD =DAY-SCHEDULE
                           (1,7) (1.)
                           (8,19) (0.)
                           (20,24) (1.) ...
        =DAY-SCHEDULE
                           (1,7) (0.)
ONPK SD
                           (8,19) (1.)
                           (20,24) (0.) ...
                          (1,24) (1.) ...
OFFPK SEND =DAY-SCHEDULE
W24FULON
           =WEEK-SCHEDULE (ALL) DS24ON1
                           (ALL) DSHTSET1 ..
WHTSET1 =WEEK-SCHEDULE
WCLSET1 =WEEK-SCHEDULE (ALL) DSCLGSET1
WLOTMPNOHT =WEEK-SCHEDULE (ALL) DLOTMPNOHT
WHITMPNOCL =WEEK-SCHEDULE (ALL) DHITMPNOCL
W24FULOFF =WEEK-SCHEDULE (ALL) DS24OFF0
WATSET270 =WEEK-SCHEDULE
                            (ALL) DSHTSET270
                            (ALL) DHITMPNOCL
WSNOCOOL
           =WEEK-SCHEDULE
                            (WD)
OFFPK SW
           =WEEK-SCHEDULE
                                 OFFPK SD
                            (WEH) OFFPK SEND
                            (WD)
                                  ONPK SD
ONPK SW
           =WEEK-SCHEDULE
                            (WEH) DS24OFF0
S YR SCHD FULON 24HRS 7D
YSON247D
          =SCHEDULE THRU DEC 31 W24FULON
$ YR SCHD HEATING SEAS 1
YSHTSEAS1 =SCHEDULE THRU MAY 15 W24FULON
                      THRU OCT 15 W24FULOFF
                      THRU DEC 31 W24FULON
$ YR SCH COOL SEASON 1
YSCLSEAS1 =SCHEDULE THRU MAY 15 W24FULOFF
                      THRU OCT 15 W24FULON
                      THRU DEC 31 W24FULOFF
$ YRSCH HTSET1 72 /NON0
           =SCHEDULE THRU MAY 15 WHTSET1
    SET1
                      THRU OCT 15 WHTSET1
                      THRU DEC 31 WHTSET1
$ YRSCH COLSET 72/NON 130
        =SCHEDULE THRU MAY 15 WCLSET1
```

YCLSET1

```
THRU OCT 15 WCLSET1
THRU DEC 31 WCLSET1
```

S YR SCHD 24H7D FUL OF

YST 7DOF =SCHEDULE THRU DEC 31 W24FULOFF ...

S YRSCH HTSET2-70 /NON0

YHTSET2-70 =SCHEDULE THRU MAY 15 WSHTSET270

THRU OCT 15 WHITMPNOCL

THRU DEC 31 WSHTSET270

S YRSYS SCH NO COOL SUM

YSHWNOCOOL =SCHEDULE THRU MAY 15 WSHTSET270

THRU OCT 15 WSNOCOOL

THRU DEC 31 WSHTSET270

OFFPK SYR =SCHEDULE THRU DEC 31 OFFPK SW

ONPK SYR =SCHEDULE THRU DEC 31 ONPK SW .

\$ ZONE DESCRIPTION

1LDXHT = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

BASEBOARD-CTRL = THERMOSTATIC

BASEBOARD-RATING = -466500.

SIZING-OPTION = FROM-LOADS

1LDXNOHT = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

SIZING-OPTION = FROM-LOADS

2LDX =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

SIZING-OPTION = FROM-LOADS

3LDX = ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

SIZING-OPTION = FROM-LOADS

4LDX =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0

HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

SIZING-OPTION = FROM-LOADS

1LHWONLY =ZONE DESIGN-HEAT-T = 70.0 DESIGN-COOL-T = 90.0

HEAT-TEMP-SCH = YHTSET2-70 COOL-TEMP-SCH = YSHWNOCOOL

ZONE-TYPE = CONDITIONED

THERMOSTAT-TYPE = PROPORTIONAL

BASEBOARD-RATING = -514500. ASSIGNED-CFM = 1. SIZING-OPTION = FROM-LOADSHWELV =ZONE DESIGN-HEAT-T = 70.0 DESIGN-COOL-T = 90.0HEAT-TEMP-SCH = YHTSET2-70 COOL-TEMP-SCH = YSHWNOCOOL ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC BASEBOARD-RATING = -60000. ASSIGNED-CFM = 1. SIZING-OPTION = FROM-LOADS DESIGN-HEAT-T = 70.0 DESIGN-COOL-T = 90.0 4LHWELV =ZONE HEAT-TEMP-SCH = YHTSET2-70 COOL-TEMP-SCH = YSHWNOCOOL ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC BASEBOARD-RATING = -60000. ASSIGNED-CFM = 1. SIZING-OPTION = FROM-LOADS OLDXHT =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL BASEBOARD-CTRL = THERMOSTATIC OLDXONLY =ZONE DESIGN-HEAT-T = 72.0 DESIGN-COOL-T = 75.0HEAT-TEMP-SCH = YHTSET1 COOL-TEMP-SCH = YCLSET1 ZONE-TYPE = CONDITIONED THERMOSTAT-TYPE = PROPORTIONAL SIZING-OPTION = FROM-LOADS \$ SYSTEM DESCRIPTION 1SDXHT =SYSTEM SYSTEM-TYPE = SZRHMAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0HEATING-SCHEDULE = YSHTSEAS1 COOLING-SCHEDULE = YSON247D HEAT-SET-T = 190.0 PREHEAT-T = 0.0 OA-CONTROL = FIXEDMAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER RETURN-AIR-PATH = DUCT ZONE-NAMES = (1LDXHT)1SDX =SYSTEM SYSTEM-TYPE = SZRHMAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0HEATING-SCHEDULE = YS247DOF COOLING-SCHEDULE = YSON247D HEAT-SET-T = 55.0 PREHEAT-T = 0.0 OA-CONTROL = FIXEDMAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER

> RETURN-AIR-PATH = DUCT ZONE-NAMES = (1LDXNOHT)

BASEBOARD-CTRL = THERMOSTATIC

```
SYSTEM-TYPE = SZRH
2SDX
         =SYSTEM
                     MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YS247DOF
                      COOLING-SCHEDULE = YSON247D HEAT-SET-T = 55.0
                      PREHEAT-T = 0.0 OA-CONTROL = FIXED
                      MAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.42
                      SUPPLY-KW = 0.000783 NIGHT-CYCLE-CTRL = STAY-OFF
                      NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
                      HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                      RETURN-AIR-PATH = DUCT
                      ZONE-NAMES = (2LDX)
3SDX
           =SYSTEM
                      SYSTEM-TYPE = SZRH
                      MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                      HEATING-SCHEDULE = YS247DOF
                      COOLING-SCHEDULE = YSON247D HEAT-SET-T = 55.0
                      PREHEAT-T = 0.0 ECONO-LIMIT-T = 55.0
                      OA-CONTROL = FIXED MAX-OA-FRACTION = 0.0
                      SUPPLY-DELTA-T = 2.42 SUPPLY-KW = 0.000783
                      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
                      MIN-CFM-RATIO = 1.0 HEATING-CAPACITY = -1.
                      PREHEAT-SOURCE = HOT-WATER RETURN-AIR-PATH = DUCT
                      ZONE-NAMES = (3LDX)
                      SYSTEM-TYPE = SZRH
4SDX
          =SYSTEM
                      MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                      HEATING-SCHEDULE = YS247DOF
                      COOLING-SCHEDULE = YSON247D HEAT-SET-T = 55.0
                      PREHEAT-T = 0.0 OA-CONTROL = FIXED
                      MAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.42
                      SUPPLY-KW = 0.000783 NIGHT-CYCLE-CTRL = STAY-OFF
                      NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
                      HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                      RETURN-AIR-PATH = DUCT
                      ZONE-NAMES = (4LDX)
1SHWONLY =SYSTEM
                      SYSTEM-TYPE = SZRH
                      MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                      HEATING-SCHEDULE = YSHTSEAS1
                      COOLING-SCHEDULE = YS247DOF HEAT-SET-T = 55.0
                      PREHEAT-T = 0.0 OA-CONTROL = FIXED
                      MAX-OA-FRACTION = 0.0 FAN-SCHEDULE = YSHTSEAS1
                      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
                      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
                      MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 1.
                      HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                      RETURN-AIR-PATH = DUCT
                      ZONE-NAMES = (1LHWONLY)
04SHWELEV =SYSTEM
                      SYSTEM-TYPE = SZRH
                      MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                      HEATING-SCHEDULE = YSHTSEAS1
                      COOLING-SCHEDULE = YS247DOF HEAT-SET-T = 55.0
                      PREHEAT-T = 0.0 OA-CONTROL = FIXED
                      MAX-OA-FRACTION = 0.0 FAN-SCHEDULE = YSHTSEAS1
                      SUPPLY-DELTA-T = 2.4 SUPPLY-KW = 0.00078
                      NIGHT-CYCLE-CTRL = STAY-OFF NIGHT-VENT-DT = 0.0
                      MIN-CFM-RATIO = 1.0 COOLING-CAPACITY = 1.
                      HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                      RETURN-AIR-PATH = DUCT
```

ZONE-NAMES = (03LHWELV, 4LHWELV) ..

```
=SYSTEM
                     SYSTEM-TYPE = SZRH
0SDXHT
                     MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YSHTSEAS1
                     COOLING-SCHEDULE = YSON247D  HEAT-SET-T = 55.0
                     PREHEAT-T = 0.0 OA-CONTROL = FIXED
                     MAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.4
                     SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF
                     NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
                     HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                     RETURN-AIR-PATH = DUCT
                     ZONE-NAMES = (OLDXHT)
                     SYSTEM-TYPE = SZRH
0SDXNOHT
         =SYSTEM
                     MAX-SUPPLY-T = 190.0 MIN-SUPPLY-T = 55.0
                     HEATING-SCHEDULE = YS247DOF
                     COOLING-SCHEDULE = YSON247D HEAT-SET-T = 55.0
                     PREHEAT-T = 0.0 OA-CONTROL = FIXED
                     MAX-OA-FRACTION = 0.0 SUPPLY-DELTA-T = 2.4
                     SUPPLY-KW = 0.00078 NIGHT-CYCLE-CTRL = STAY-OFF
                     NIGHT-VENT-DT = 0.0 MIN-CFM-RATIO = 1.0
                     HEATING-CAPACITY = -1. PREHEAT-SOURCE = HOT-WATER
                     RETURN-AIR-PATH = DUCT
                      ZONE-NAMES = (OLDXONLY)
                    S HOURLY REPORT DESCRIPTION
           =REPORT-BLOCK VARIABLE-TYPE = 1SDXHT
                        VARIABLE-LIST = (33) ...
           =REPORT-BLOCK VARIABLE-TYPE = 1SDX
                        VARIABLE-LIST = (33)
           =REPORT-BLOCK VARIABLE-TYPE = 2SDX
                        VARIABLE-LIST = (33) ...
S 4
          =REPORT-BLOCK VARIABLE-TYPE = 3SDX
                        VARIABLE-LIST = (33) ...
S 5
          =REPORT-BLOCK VARIABLE-TYPE = 4SDX
                        VARIABLE-LIST = (33) ...
          =REPORT-BLOCK VARIABLE-TYPE = 1SHWONLY
S 6
                        VARIABLE-LIST = (33) ...
S 7
          =REPORT-BLOCK VARIABLE-TYPE = 04SHWELEV
                        VARIABLE-LIST = (33) ...
S 8
         =REPORT-BLOCK VARIABLE-TYPE = OSDXHT
                        VARIABLE-LIST = (33) ...
S 9
         =REPORT-BLOCK VARIABLE-TYPE = OSDXNOHT
                        VARIABLE-LIST = (33) ...
RS 1
     = HOURLY-REPORT REPORT-SCHEDULE = OFFPK SYR
                        REPORT-BLOCK = (S_1, S_2, S_3, S_4, S_5, S_6, S_7, S_8, S_9)
END
COMPUTE SYSTEMS
INPUT PLANT ..
                 $-----$
```

\$ E Z - D O E P L A N T S I N P U T \$ \$-----\$

\$ GENERAL PROJECT DATA

```
ENTECH ENGINEERING
TITLE LINE-1 *
      LINE-2 *EZDOE - ELITE SOFTWARE DEVELOPMENT INC*
      LINE-3 * READING,
                                 PA
                                          19603
      LINE-4 *4130.05 FT. MONMOUTH - MYER CENTER, NJ *
      LINE-5 *FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH * ..
ABORT
                   ERRORS
DIAGNOSTIC
                   WARNINGS ..
PLANT-REPORT
                  VERIFICATION=(PV-A)
                   SUMMARY=(PS-D, BEPS)
                   REPORT-FREQUENCY = MONTHLY ...
                    $ SCHEDULES
D24FULON =DAY-SCHEDULE (1,24) (1.) ...
D24FULOF =DAY-SCHEDULE (1,24) (0.) ..
OFFPK PD =DAY-SCHEDULE (1,7) (1.)
                          (8,19) (0.)
                          (20,24) (1.) ...
                          (1,7) (0.)
ONPK PD =DAY-SCHEDULE
                          (8,19) (1.)
                          (20,24) (0.) ...
   PK PEND =DAY-SCHEDULE (1,24) (1.) ...
W24FULON7D =WEEK-SCHEDULE (ALL) D24FULON ...
W24FULOF7D =WEEK-SCHEDULE (ALL) D24FULOF ...
OFFPK PW =WEEK-SCHEDULE
                           (WD) OFFPK PD
                           (WEH) OFFPK PEND ..
ONPK PW =WEEK-SCHEDULE
                           (WD) ONPK PD
                           (WEH) D24FULOF ..
$ YRSCH FUL ON 24HR/7D
Y24FULON7D =SCHEDULE THRU DEC 31 W24FULON7D ...
$ YRSCH HEATING SEAS1
YHTSEAS1 =SCHEDULE THRU MAY 15 W24FULON7D
                     THRU OCT 15 W24FULOF7D
                     THRU DEC 31 W24FULON7D
$ YRSCH COOL SEAS1
YCLSEAS1 =SCHEDULE THRU MAY 15 W24FULOF7D
                     THRU OCT 15 W24FULON7D
                     THRU DEC 31 W24FULOF7D ...
OFFPK PYR =SCHEDULE THRU DEC 31 OFFPK_PW ...
```

ONPK PYR =SCHEDULE THRU DEC 31 ONPK PW ...

\$ EQUIPMENT DESCRIPTION

STABLR1 =PLANT-EQUIPMENT TYPE = STM-BOILER

SIZE = -999. ..

HRCCH1 =PLANT-EQUIPMENT TYPE = HERM-REC-CHLR

SIZE = -999. ..

DHW1 =PLANT-EQUIPMENT TYPE = DHW-HEATER

SIZE = -999. ..

PLANT-PARAMETERS BOILER-CONTROL = STANDBY HW-BOILER-HIR = 1.2

TWR-WTR-SET-POINT = 85. TWR-CELL-MAX-GPM = 1.0 TWR-FAN-OFF-CFM = 0.1 CHILLER-CONTROL = STANDBY HERM-REC-COND-TYPE = AIR HERM-REC-COND-PWR = 0.15

CHILL-WTR-T = 55. CCIRC-HEAD = 100.0

CCIRC-DESIGN-T-DROP = 5.0 HCIRC-HEAD = 90.0

HCIRC-DESIGN-T-DROP = 25.0

PART-LOAD-RATIO TYPE = HERM-REC-CHLR

MIN-RATIO = 0.2500 MAX-RATIO = 1.0000 OPERATING-RATIO = 1.0000 ELEC-INPUT-RATIO = 0.1600 ...

ENERGY-RESOURCE RESOURCE = FUEL-OIL ..

ENERGY-RESOURCE RESOURCE = ELECTRICITY ..

ENERGY-RESOURCE RESOURCE = NATURAL-GAS ..

S HOURLY REPORT DESCRIPTION

P 1 = REPORT-BLOCK VARIABLE-TYPE = HERM-REC-CHLR

VARIABLE-LIST = (3,18) ...

P 2 = REPORT-BLOCK VARIABLE-TYPE = STM-BOILER

VARIABLE-LIST = (3,4) ...

RP_1 = HOURLY-REPORT REPORT-SCHEDULE = OFFPK_PYR

REPORT-BLOCK = (P_1, P_2)

END ..

COMPUTE PLANT ..

STOP ..

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 LDL RUN 1

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

WEATHER FILE- NEWARK, NJ

REPORT- LV-A GENERAL PROJECT AND BUILDING INPUT ______

PERIOD OF STUDY

STARTING DATE ENDING DATE NUMBER OF DAYS

1 JAN 1994 31 DEC 1994

365

SITE CHARACTERISTIC DATA

BUILDING

STATION LATITUDE LONGITUDE ALTITUDE TIME AZIMUTH (DEG) (DEG) (FT) ZONE (DEG) NAME

40.7 74.8 15. 5 EST 0.0 NEWARK, NJ

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 LDL RUN 1
DING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

READING, WEATHER FILE- NEWARK, NJ

REPORT- LV-B SUMMARY OF SPACES OCCURRING IN THE PROJECT -----

NUMBER OF SPACES 10 EXTERIOR 8 INTERIOR 2

SPACE	SPACE MULT	SPACE TYPE	I AZIMUTH	LIGHTING (WATT / SQFT)	PEOPLE	EQUIP (WATT / SQFT)	INFILTRATION METHOD	AIR CHANGES PER HOUR	AREA (SQFT)	VOLUME (CUFT)
SPACE				-						
						10.00	NO-INFILT.	0.00	16950.00	283065.00
1LDXHT	1.0	EXT	0.0	4.00	57.7	10.00				
1LDXNOHT	1.0	EXT	0.0	4.00	32.7	10.00	NO-INFILT.	0.00	9601.00	160336.70
2LDX	1.0	INT	0.0	4.00	72.1	10.00	NO-INFILT.	0.00	21192.00	204927.00
3LDX	1.0	INT	0.0	4.00	49.2	10.00	NO-INFILT.	0.00	14457.00	139800.00
4LDX	1.0	EXT	0.0	5.00	119.6	10.00	NO-INFILT.	0.00	35153.00	339930.00
1LHWONLY	1.0	EXT	0.0	2.00	85.6	0.70	AIR-CHANGE	1.00	25161.00	421464.00
03LHWELV	4.0	EXT	0.0	2.00	0.9	0.70	AIR-CHANGE	1.00	250.00	4189.00
4LHWELV	1.0	EXT	0.0	2.00	0.9	0.70	AIR-CHANGE	1.00	250.00	2438.00
OLDXHT	1.0	EXT	0.0	4.00	6.4	5.00	AIR-CHANGE	0.00	1872.00	18720.00
OLDXONLY	1.0	EXT	0.0	4.00	9.7	5.00	NO-INFILT.	0.00	2847.00	28470.00
BUILDING TOTALS					434.5		•		127733.00	1603339.75

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

DOE-2.1D 7/ 2/1996 11: 9:52 LDL RUN 1

REPORT- LS-C BUILDING PEAK LOAD COMPONENTS

WEATHER FILE- NEWARK, NJ

*** BUILDING ***

FLOOR AREA 128483 SQFT 11936 SQMT VOLUME 1615907 CUFT 45762 CUMT

	COOLING LOAD	HEATING LOAD
	=======================================	28222222442463453
TIME	JUN 13 3PM	FEB 20 3AM
DRY-BULB TEMP	98F 37C	10F -12C
WET-BULB TEMP	74F 23C	7F -14C

	SENSIBLE	LAT	ENT	SENS	NSIBLE		
	(KBTU/H) (KW)	(KBTU/H)	(KW)	(KBTU/H)	(KW)		
LLS	81.385 23.836	0.000	0.000	-101.427	-29.705		
ROOFS	331.822 97.18	0.000	0.000	-492.283	-144.177		
GLASS CONDUCTION	29.286 8.57	0.000	0.000	-50.890	-14.905		
GLASS SOLAR	96.624 28.29	0.000	0.000	10.021	2.935		
DOOR	0.000 0.00	0.000	0.000	0.000	0.000		
INTERNAL SURFACES	0.000 0.00	0.000	0.000	0.000	0.000		
UNDERGROUND SURFACES	-10.842 -3.17	0.000	0.000	-20.172	-5.908		
OCCUPANTS TO SPACE	90.468 26.49	78.663	23.038	4.056	1.188		
LIGHT TO SPACE	1367.768 400.58	0.000	0.000	86.459	25.322		
EQUIPMENT TO SPACE	1587.170 464.84	0.000	0.000	203.194	59.510		
PROCESS TO SPACE	0.000 0.00	0.000	0.000	0.000	0.000		
INFILTRATION	232.289 68.03	2 130.782	38.303	-912.613	-267.282		
TOTAL	3805.971 1114.67	4 209.445	61.341	-1273.655	-373.022		
TOTAL LOAD	4015.416 KBTU/H	1176.015	KW	-1273.655 KBTU/H	-373.022	KW	
TOTAL LOAD / AREA	31.25BTU/H. <i>S</i> QF	T 98.523	w /somt	9.913BTU/H.SQFT	31.251	w /somt	

* NOTE 1) THE ABOVE LOADS EXCLUDE OUTSIDE VENTILATION AIR

2) TIMES GIVEN IN STANDARD TIME FOR THE LOCATION

IN CONSIDERATION

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 LDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- LS-D BUILDING MONTHLY LOADS SUMMARY

WEATHER FILE- NEWARK, NJ

	<u> </u>	- c o	OLI	и G -			н	BATI	NG		E L	E C
					MAXIMUM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	764.87653	28 14	37.F	30.F	2763.208	-263.115	5 20	15.F	12.F	-1183.963	325164.	1003.650
FEB	714.90106	8 14	37.F	30.F	2755.603	-223.215	20 3	10.F	7.F	-1273.655	293965.	1003.650
MAR	897.07300	16 14	67.F	50.F	3146.924	-179.562	5 1	29.F	24.F	-641.753	341826.	1003.650
APR	954.42029	19 13	76.F	55.F	3476.269	-76.586	9 3	32.F	27.F	-584.333	320318.	1003.650
MAY	1076.76624	10 13	87.F	68.F	3674.709	-36.413	2 21	50.F	39.F	-366.646	325163.	1003.650
JUN	1216.21118	13 14	98.F	74.F	3805.970	-3.826	14 23	55.F	54.F	-133.062	328649.	1003.650
lur	1221.03735	13 13	90.F	73.F	3743.262	-1.478	15 4	63.F	60.F	-72.973	316832.	1003.650
AUG	68.32874	18 13	93.F	72.F	3802.003	-2.790	21 4	60.F	59.F	-110.970	341826.	1003.650
SEP	1096.32874	7 13	82.F	64.F	3559.754	-9.838	23 4	55.F	47.F	-163.770	320318.	1003.650
oct	956.81537	14 13	75.F	61.F	3399.395	-46.571	25 5	41.F	36.F	-449.884	316832.	1003.650
NOV	834.06848	2 14	77.F	70.F	3269.255	-115.507	25 6	38.F	37.F	-625.698	311987.	1003.650
DEC	791.99347	2 14	64.F	53.F	3031.096	-234.832	26 7	25.F	24.F	~749.837	325163.	1003.650
	~~~~~~											
TOTAL	11792.819					-1193.733					3868043.	
MAX					3805.970					-1273.655		1003.650

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 LDL RUN 1

WEATHER FILE- NEWARK, NJ

PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW - .1BTUH REPORT- LS-F BUILDING MONTHLY LOAD COMPONENTS IN MBTU

										~~~~~~			
(UNI	BTU)	WALLS	ROOFS	INT SUR	UND SUR	INFIL	GL CON	GL SOL	OCCUP	LIGHTS	EQUIP	SOURCE	TOTAL
	HEATNG	-50.777	-135.520	0.000	~6.446	-221.726	-23.601	7.231	6.149	73.470	88.103	0.000	-263.115
JAN	SEN CL	-47.128	-123.797	0.000	-6.908	-2.359	-33.071	12.208	19.580	343.095	603.255	0.000	764.876
	LAT CL					0.000			15.947		0.000	0.000	15.947
	HEATNG	-42.955	-101.342	0.000	~6.847	-193.664	-20.514	8.985	5.202	59.837	68.081	0.000	-223.215
FEB	SEN CL	-40.029	-114.899	0.000	~6.703	-3.055	-28.634	14.300	18.122	317.869	557.930	0.000	714.901
	LAT CL					0.000			14.684		0.000	0.000	14.684
	HEATNG	-37.025	-56.959	0.000	-6.298	-181.005	-17.754	11.620	4.985	53.073	49.803	0.000	-179.562
MAR	SEN CL	-36.864	-129.589	0.000	-8.841	-7.427	-27.683	20.586	22.716	392.341	671.833	0.000	897.073
	LAT CL					0.215			18.422		0.000	0.000	18.636
	HEATNG	-20.406	-11.900	0.000	-4.267	-85.849	 -9.635	8.723	2.761	26.962	17.024	0.000	-76.586
APR	SEN CL	-22.432	-85.502	0.000	-9.628	-11.741	-19.341	28.122	22.903	387.768	664.271	0.000	954.420
	LAT CL					2.501			18.447		0.000	0.000	20.948
	HEATNG	-11.177	-0.673	0.000	-1.390	-47.522	-5.224	6.550	1.637	15.218	6.170	0.000	-36.413
MAY	SEN CL	-10.322	-35.454	0.000	-9.824	-3.783	-12.756	37.890	24.101	401.528	685.384		1076.765
	LAT CL					12.891			19.453		0.000	0.000	32.344
_	HEATNG	-2.526	-0.052	0.000	0.000	-6.224	-0.988	1.270	0.304	3.129	1.260	0.000	-3.826
JUN	4 CT	4.149	30.820	0.000	-7.816	9.116	-4.553	40.557	26.256	424.337	693.345	0.000	1216.210
	LAT CL					40.284			21.073		0.000	0.000	61.356
	HEATNG	-0.916	-0.026	0.000	0.000	-2.614	-0.282	0.364	0.123	1.315	0.557	0.000	-1.478
JUL	SEN CL	10.311	51.721	0.000	-5.356	16.391	-1.342	42.541	24.762	403.475	678.534	0.000	1221.037
	LAT CL					53.322			19.795		0.000	0.000	73.117
	HEATNG	-2.013	-0.051	0.000	0.000	-4.074	-0.696	0.654	0.209	2.205	0.975	0.000	-2.790
AUG	SEN CL	5.603	31.722	0.000	-3.630	10.701	-3.647	38.272	27.440	442.248	719.621	0.000	1268.329
	LAT CL					49.949			22.022		0.000	0.000	71.971
	HEATNG	 -5.122	-0.107	0.000	0.000	-14.638	-2.014	2.111	0.716	6.753	2.462	0.000	-9.838
SEP	SEN CL		-16.536		-3.366		-9.711				677.623		1096.328
	LAT CL					31.379			20.004		0.000	0.000	51.383
	HEATNG	_15 042	-3.754	0 000	0 000	-54 698	-6.920		1 944		8.519	0.000	-46.571
OCT	SEN CL		-86.592				-17.888				669.369		956.816
001	LAT CL	20.502	00.332	3.000	110/1	4.719	27.1450	22.,	18.501	303.200	0.000		23.220
	HEATNG	-29.553	-39.732	0.000	-0.799	-115.842	-13.120	5.834	3.737	39.050	34.918	0.000	-115.507
VOV	SEN CL	-32.104	-122.639	0.000	-6.478	-6.046	-23.729	12.958	20.909	360.634	630.564	0.000	834.069
	LAT CL					5.363			16.901		0.000		22.265
			-100.413								70.848		-234.832
DEC	SEN CL	-42.775	-133.418	0.000	-6.818	-2.372	-30.559	11.272	20.054	353.689	622.921	0.000	791.993
	T CL					0.000			16.188		0.000		16.188
	•												
	HEATNG	-263.794	-450.528	0.000	~29.789	-1140.108	-121.650	65.358	33.561	364.507	348.729	0.000	-1193.713
TOT	SEN CL	-239.162	-734.162	0.000	-80.243	-21.678	-212.912	312.581	274.624	4619.205	7874.564	0.000	11792.817

PROGRAM

WARNING*******	***********
SYSTEM 1SDXHT	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WADNTNC**********	*************
SYSTEM 1SDX	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNTNG*********	*****************
SYSTEM 1SDX	MAY HAVE INADEQUATE HEATING CAPABILIT Y
(CHECK HEATING-C	APACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)
WARNING*******	***********
SYSTEM 2SDX	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING********	************
SYSTEM 2SDX	MAY HAVE INADEQUATE HEATING CAPABILIT Y
(CHECK HEATING-C	APACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)
WARNING********	***********
SYSTEM 3SDX	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING********	* ************************************
SYSTEM 3SDX	MAY HAVE INADEQUATE HEATING CAPABILIT Y
(CHECK HEATING-C	APACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)

SYSTEM 4SDX	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING*******	*************
SYSTEM 4SDX	MAY HAVE INADEQUATE HEATING CAPABILIT Y
(CHECK HEATING-C	APACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)
WARNING*******	*************
SYSTEM 1SHWONLY	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING*******	***********
SYSTEM 1SHWONLY	MAY HAVE INADEQUATE COOLING CAPABILITY
(CHECK COOLING-C	APACITY AND MIN-SUPPLY-T FOR CONSISTENCY)
WARNING*******	***********
SYSTEM 04SHWELEV	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING*******	***********
SYSTEM 04SHWELEV	MAY HAVE INADEQUATE COOLING CAPABILITY
(CHECK COOLING-C	APACITY AND MIN-SUPPLY-T FOR CONSISTENCY)
WARNING*******	**********
SYSTEM OSDXHT	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION
WARNING********	***********
SYSTEM OSDXHT	MAY HAVE INADEQUATE HEATING CAPABILIT Y
	APACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)
WARNING********	***********
SYSTEM OSDXNOHT	HAS ZERO OUTSIDE AIR FOR DESIGN CALCULATION

WARNING*******************

SYSTEM OSDXNOHT MAY HAVE INADEQUATE HEATING CAPABILIT Y
(CHECK HEATING-CAPACITY, HEAT-SET-T, PRE-HEAT-T AND MAX-SUPPLY-T FOR CONSISTENCY)

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- SS-D PLANT MONTHLY LOADS SUMMARY FOR DEFAULT-PLANT WEATHER FILE- NEWARK, NJ

												E L E C		
					MAXIMUM						MAXIMUM	ELEC-	MAXIMUM	
	COOLING	TIM	E DRY-	WET-	COOLING	HEATING	T	IME	DRY-	WET-	HEATING	TRICAL	ELEC	
	ENERGY	OF MA	x BULB	BULB	LOAD	ENERGY	OF	MAX	BULB	BULB	LOAD	ENERGY	LOAD	
MONTH	(MBTU)	DY H	R TEMP	TEMP	(KBTU/HR)	(MBTU)	DY	HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)	
JAN	1030.86877	28 1	4 37.F	30.F	2990.694	-195.082	5	20	15.F	12.F	-584.666	417931.	1128.341	
FEB	958.76001	11 1	4 52.F	50.F	3034.267	-167.990	20	3	10.F	7.F	-581.473	377755.	1128.341	
MAR	1184.26794	16 1	4 67.F	50.F	3266.959	-140.064	5	1	29.F	24.F	-531.706	434594.	1128.341	
APR	1225.55615	15 1	5 73.F	55.F	3496.059	-48.435	9	4	32.F	27.F	-457.452	410094.	1128.341	
MAY	1334.88306	10 1	3 85.F	68.F	3597.508	-6.228	4	2	40.F	35.F	-227.738	417930.	1128.341	
JUN	1431.97034	13 1	4 96.F	73.F	3710.452	0.000			٠		0.000	418423.	1128.337	
JUL	1435.57861	12 1	3 87.F	71.F	3730.172	0.000					0.000	409597.	1128.337	
AUG	189.34998	12 1	4 87.F	69.F	3730.011	0.000					0.000	434592.	1128.337	
SEP	1342.88159	16 1	4 76.F	63.F	3545.524	0.000					0.000	410092.	1128.337	
OCT	1240.27942	14 1	4 75.F	61.F	3435.643	-12.581	25	6	41.F	36.F	-322.264	409598.	1128.341	
NOV	1113.56702	2 1	4 77.F	70.F	3359.911	-85.671	25	6	38.F	37.F	-476.418	401762.	1128.341	
DEC	1071.41553	2 1	4 64.F	53.F	3183.396	-183.532	24	13	33.F	29.F	-542.650	417931.	1128.341	
TOTAL	14859.358					-839.583						4960114.		
MAX					3730.172						-584.666		1128.341	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 1SDXHT WEATHER FILE- NEWARK, NJ

C O O L I N G							H E	ATI	N G		E L	E C
					MUMIXAM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	175.76674	28 14	37.F	30.F	508.361	0.000				0.000	65595.	172.688
FEB	164.49419	23 14	39.F	32.F	512.493	0.000				0.000	59288.	172.688
MAR	202.85103	16 14	67.F	50.F	561.898	0.000				0.000	68130.	172.688
APR .	210.12144	21 14	80.F	62.F	581.345	0.000				0.000	64338.	172.688
MAY	228.43086	10 14	87.F	68.F	609.368	0.000				0.000	65595.	172.688
מטנ	242.29442	30 14	91.F	74.F	610.740	0.000		•		0.000	65605.	172.688
MT	243.20132	13 14	90.F	73.F	609.506	0.000				0.000	64328.	172.688
AUG	51.53531	18 14	93.F	72.F	612.498	0.000				0.000	68130.	172.688
SEP	227.46468	7 13	82.F	65.F	594.641	0.000				0.000	64338.	172.688
OCT	211.08777	14 14	75.F	61.F	576.856	0.000				0.000	64328.	172.688
NOV	188.37050	2 14	77.F	70.F	553.353	0.000				0.000	63070.	172.688
DEC	181.37585	2 14	64.F	53.F	542.733	0.000				0.000	65595.	172.688
TOTAL	2526.995				,	0.000					778322.	

612.498

MAX

0.000

172.688

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR 1SDXHT

PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

WEATHER FILE- NEWARK, NJ

READING,

MONTH	ZONE COIL COOLING ENERGY (MBTU)	MAXIMUM ZONE COIL COOLING LOAD (KBTU/HR)	ZONE COIL HEATING ENERGY (MBTU)	MAXIMUM ZONE COIL HEATING LOAD (KBTU/HR)	BASEBOARD HEATING ENERGY (MBTU)	MAXIMUM BASEBOARD HEATING LOAD (KBTU/HR)	PRE-HEAT COIL ENERGY (MBTU)	MAXIMUM PRE-HEAT COIL LOAD (KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
ar (0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000	0.000	0.000	0.000	0.000	0.000
MAX		0.000		0.000		0.000		0.000

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-K SPACE TEMPERATURE SUMMARY 1SDXHT

WEATHER FILE- NEWARK, NJ

		ERAGE	SPAC	יים יינ	Е М Р	AVERAGE T	EMPERATURE I	TEFFFFRCF	SIMMED TEM	P DIFFERENCE	
	AV	ERAGE	SPA		5 M F	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	HUMIDITY RATIO DIFFERENCE BETWEEN
	ALL	COOLING	HEATING	FAN ON	FAN OFF	ALL	FAN ON	FAN OFF	HEATING	ALL	OUTDOOR AND
	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	ROOM AIR
MONTH	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(FRAC.OR MULT.)
JAN	74.81	74.81		74.81	0.00	-43.45	-43.45	0.00		1346.87	0.00000
FEB	74.84	74.84		74.84	0.00	-41.62	-41.62	0.00		1165.24	-0.00003
MAR	74.94	74.94		74.94	0.00	-34.43	-34.43	0.00		1067.33	-0.00002
APR	75.00	75.00		75.00	0.00	-22.10	-22.10	0.00		664.92	0.00012
MAY	75.04	75.04		75.04	0.00	-12.76	-12.76	0.00		444.66	0.00067
JUN	75.13	75.13		75.13	0.00	-2.92	-2.92	0.00		215.17	0.00253
JUL	75.10	75.10		75.10	0.00	0.37	0.37	0.00		169.44	0.00318
AUG	75.14	75.14		75.14	0.00	-1.65	-1.65	0.00		194.02	0.00370
SEP	75.07	75.07		75.07	0.00	-8.08	-8.08	0.00		262.41	0.00236
OCT	74.96	74.96		74.96	0.00	-17.87	-17.87	0.00		558.35	0.00061
NOV	74.89	74.89		74.89	0.00	-28.67	-28.67	0.00		860.40	0.00030
DEC	74.83	74.83		74.83	0.00	-39.29	-39.29	0.00		1217.88	-0.00003
ANNUA.	L 74.98	74.98	0.00	74.98	0.00	-20.93	-20.93	0.00	0.00	8166.68	0.00112

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 DING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-F ZONE DEMAND SUMMARY IN 1SDXHT FOR 1LDXHT

WEATHER FILE- NEWARK, NJ

J	

---DEMANDS------BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
jan	124.84687	0.000	0.00000	0.000	75.7	74.3	0	. 0
FEB	118.50689	0.000	0.00000	0.000	75.7	74.2	0	o
MAR	151.90965	0.000	0.00000	0.000	75.9	74.4	0	0
APR	160.57507	0.000	0.00000	0.000	76.0	74.4	0	0
MAY	176.47926	0.000	0.00000	0.000	76.0	74.5	0	0
JUN	190.88374	0.000	0.00000	0.000	76.0	74.6	0	0
	190.27350	0.000	0.00000	0.000	76.0	74.6	0	0
AUG	198.23311	0.000	0.00000	0.000	76.2	74.5	0	0
SEP	176.78696	0.000	0.00000	0.000	76.0	74.5	. 0	o
oct	159.41942	0.000	0.00000	0.000	75.9	74.4	0	0
NOV	138.75520	0.000	0.00000	0.000	75.9	74.4	0	0
DEC	130.46097	0.000	0.00000	0.000	75.8	74.3	o	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 1SDX ______

WEATHER FILE- NEWARK, NJ

		c	0 0 L	ng-			H E	ATI	ng		E L	E C
MONTH	COOLING ENERGY (MBTU)	TIM OF MA DY H	x BUL	BULB	MAXIMUM COOLING LOAD (KBTU/HR)	HEATING ENERGY (MBTU)	TIME OF MAX DY HR	DRY- BULB TEMP	WET- BULB TEMP	MAXIMUM HEATING LOAD (KBTU/HR)	ELEC- TRICAL ENERGY (KWH)	MAXIMUM ELEC LOAD (KW)
JAN	109.87893	25 1	.4 52.	F 41.F	284.854	0.000				0.000	36296.	96.661
FEB	100.79175	11 1	.4 52.	F 50.F	287.939	0.000				0.000	32807.	96.661
MAR	120.17087	15 1	.5 65.	F 58.F	298.072	0.000				0.000	37732.	96.661
APR	118.69505	22 1	.4 68.	F 60.F	304.955	0.000				0.000	35611.	96.661
MAY	125.52036	10 1	L4 87.	F 68.F	312.632	0.000				0.000	36296.	96.661
אחר	129.99603	29	L4 87.	F 69.F	313.938	0.000		•		0.000	36329.	96.661
ur	128.70070	12	14 88.	F 72.F	312.708	0.000				0.000	35578.	96.661
	.34.39304	9 :	14 88.	F 71.F	313.318	0.000				0.000	37732.	96.661
SEP	123.55710	15	14 80.	F 69.F	310.071	0.000				0.000	35611.	96.661
OCT	118.33138	21	14 68	F 60.F	303.654	0.000				0.000	35578.	96.661
VOV	111.27756	2	14 77	.F 70.F	306.192	0.000				0.000	34893.	96.661
DEC	111.83203	2	14 64	.F 53.F	293.754	0.000				0.000	36296.	96.661
TOTAL						0.000					430762.	
MAX					313.938					0.000		96.661

ENTECH ENGINEERING

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

READING, REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

TOTAL 0.000

MAX

PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW - 1BTUH

1SDX

WEATHER FILE- NEWARK, NJ

0.000

0.000

0.000

	-zone coc) L I N G	-zone he	ATING -	B A S E B O	ARDS	P R E - H	EAT
		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COLL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
PEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.0000	0.000	0.00000	0.000	0.00000	0.000

APR	0.0000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000 *	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.0000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.0000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000

0.000

0.000

0.000

0.000

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-K SPACE TEMPERATURE SUMMARY 1SDX WEATHER FILE- NEWARK, NJ

моитн	A V ALL HOURS (F)	ERAGE COOLING HOURS (P)	S P A C	FAN ON HOURS	FAN OFF HOURS (F)	AVERAGE TE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	EMPERATURE 1 BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEMP BETWEEN OUTDOOR& ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOORS ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT.)
JAN	74.99	74.99		74.99	0.00	-43.63	-43.63	0.00		1352.55	-0.00001
FEB	75.00	75.00		75.00	0.00	-41.78	-41.78	0.00		1169.97	-0.00003
MAR	75.08	75.08		75.08	0.00	-34.58	-34.58	0.00		1071.96	-0.00003
APR	75.10	75.10		75.10	0.00	-22.20	-22.20	0.00		668.04	0.00011
MAY	75.12	75.12		75.12	0.00	-12.84	-12.84	0.00		446.93	0.00066
NUC	75.19	75.19		75.19	0.00	-2.98	-2.98	0.00		216.33	0.00251
JUI	75.14	75.14		75.14	0.00	0.33	0.33	0.00		170.21	0.00317
AùG	75.19	75.19		75.19	0.00	-1.70	-1.70	0.00		194.95	0.00368
SEP	75.13	75.13		75.13	0.00	-8.14	-8.14	0.00		264.22	0.00235
oct	75.06	75.06		75.06	0.00	-17.97	-17.97	0.00		561.32	0.00060
NON	75.03	75.03		75.03	0.00	-28.81	-28.81	0.00		864.56	0.00029
DEC	75.01	75.01		75.01	0.00	-39.46	-39.46	0.00		1223.30	-0.00003
ANNUA	ъ 75.09	75.09	0.00	75.09	0.00	-21.04	-21.04	0.00	0.00	8204.31	0.00111

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-F ZONE DEMAND SUMMARY IN 1SDX FOR 1LDXNOHT

WEATHER FILE- NEWARK, NJ

----DEMANDS------BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD BNERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	Maximum Zone Temp (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
Jan	83.94625	0.000	0.00000	0.000	75.9	74.5	o	0
FEB	77.37153	0.000	0.00000	0.000	75.9	74.5	0	0
MAR	94.22594	0.000	0.00000	0.000	76.0	74.5	0	o
APR	93.45490	0.000	0.00000	0.000	76.0	74.5	0	0
MAY	99.00498	0.000	0.00000	0.000	76.1	74.6	0	0
JUN	103.68858	0.000	0.00000	0.000	76.2	74.6	0	0
	101.63277	0.000	0.00000	0.000	76.2	74.6	0	0
AUG	107.10589	0.000	0.00000	0.000	76.2	74.6	0	0
SEP	97.66648	0.000	0.00000	0.000	76.1	74.6	0	0
oct	91.98180	0.000	0.00000	0.000	76.0	74.5	0	0
NOV	85.99596	0.000	0.00000	0.000	76.0	74.5	0	o
DEC	85.90159	0.000	0.00000	0.000	75.9	74.5	0	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1
DING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 2SDX WEATHER FILE- NEWARK, NJ

		- - c o	o L I	NG			н в	ATI	ng		E L	E C
					MAXIMUM					MAXIMUM	BLEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	BLEC
*	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(RW)
jan	274.32330	20 14	35.F	35.F	648.640	0.000				0.000	79332.	212.306
FEB	248.51154	9 14	38.F	33.F	653.556	0.000				0.000	71706.	212.306
MAR	286.07492	15 15	65.F	58.F	656.496	0.000				0.000	82501.	212.306
APR	270.78506	29 14	64.F	60.F	658.082	0.000				0.000	77847.	212.306
MAY	275.68390	18 14	67.F	59.F	661.414	0.000				0.000	79332.	212.306
JUN	278.04584	29 14	87.F	69.F	660.947	0.000		•		0.000	79431.	212.306
JUL	272.46158	26 14		64.F	662.274	0.000				0.000	77748.	212.306
	288.48929	2 14	78.F	63.F	660.852	0.000				0.000	82501.	212.306
SEP	271.60422	14 14	73.F	62.F	663.940	0.000				0.000	77847.	212.306
oct	270.24704	21 14	68.F	60.F	662.417	0.000				0.000	77748.	212.306
NOV	264.62100	1 14	71.F	68.F	660.767	0.000				0.000	76262.	212.306
DEC	275.57596	1 14	49.F	43.F	650.005	0.000				0.000	79332.	212.306
TOTAL	3276.426					0.000					941521.	
MAX					663.940					0.000		212.306

0.000

0.000

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

2SDX

WEATHER FILE- NEWARK, NJ

		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM	
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT	
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL	٠.
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	
ONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	
AN	0.00000	0.000	0.0000	0.000	0.00000	0.000	0.00000	0.000	
EB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
AR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
PR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
AY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
NC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
UG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
EP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
Cī	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
OV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
OTAL	0.000		0.000		0.000		0.000		

0.000

0.000

MAX

REPORT- SS-K SPACE TEMPERATURE SUMMARY

2SDX

MONTH	A V	ERAGE COOLING HOURS (F)	S P A C HEATING HOURS (P)	FAN ON HOURS	M P FAN OFF HOURS (F)	AVERAGE TE BETWEEN CUTDOOR& ROOM AIR ALL HOURS (F)	EMPERATURE I BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEMI BETWEEN OUTDOORS ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT.)
JAN	75.17	75.17		75.17	0.00	-43.81	-43.81	0.00		1358.22	-0.00001
FEB	75.18	75.18		75.18	0.00	-41.96	-41.96	0.00		1174.75	-0.00003
MAR	75.23	75.23		75.23	0.00	-34.73	-34.73	0.00		1076.49	-0.00003
APR	75.20	75.20		75.20	0.00	-22.30	-22.30	0.00		670.89	0.00011
MAY	75.17	75.17		75.17	0.00	-12.89	-12.89	0.00		448.60	0.00066
JUN	75.22	75.22		75.22	0.00	-3.01	-3.01	0.00		217.23	0.00251
JUL	75.15	75.15		75.15	0.00	0.32	0.32	0.00		170.89	0.00318
AUG	15.22	75.22		75.22	0.00	-1.73	-1.73	0.00		195.61	0.00369
SEP	75.19	75.19		75.19	0.00	-8.20	-8.20	0.00		265.65	0.00235
oct	75.14	75.14		75.14	0.00	-18.06	-18.06	0.00		564.10	0.00060
NOV	75.17	75.17		75.17	0.00	-28.94	-28.94	0.00		868.58	0.00029
DEC	75.18	75.18		75.18	0.00	-39.63	-39.63	0.00		1228.59	-0.00004
ANNU.	AL 75.19	75.19	0.00	75.19	0.00	-21.14	-21.14	0.00	0.00	8239.62	0.00111

ENTECH ENGINEERING READING,

H ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 5
PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOCA3 - DX COOL W/HW & PER HW - 1BTUH

DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

REPORT- SS-F ZONE DEMAND SUMMARY IN 2SDX FOR 2LDX

WEATHER FILE- NEWARK, NJ

---DEMANDS-----BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

	HEAT	HEAT		MOMIXAM	MAXIMUM	MINIMUM		
	EXTRACTION	ADDITION	BASEBOARD	BASEBOARD	ZONE	ZONE	HOURS	HOURS
	ENERGY	ENERGY	ENERGY	LOAD	TEMP	TEMP	UNDER	UNDER
MONTH	(MBTU)	(MBTU)	(MBTU)	(KBTU/HR)	(F)	(F)	HEATED	COOLED
JAN	219.48587	0.000	0.00000	0.000	76.3	74.7	0	a
FEB	198.98672	0.000	0.00000	0.000	76.4	74.7	0	0
MAR	231.21049	0.000	0.00000	0.000	76.5	74.7	0	0
APR	217.41350	0.000	0.00000	0.000	76.4	74.7	0	0
MAY	219.58954	0.000	0.00000	0.000	76.3	74.7	0	0
JUN	222.31543	0.000	0.00000	0.000	76.3	74.7	0	0
JUL	215.12756	0.000	0.00000	0.000	76.3	74.7	0	0
Abo	230.66203	0.000	0.00000	0.000	76.3	74.7	0	0
SEP	216.78177	0.000	0.00000	0.000	76.4	74.7	0	0
oct	214.50052	0.000	0.00000	0.000	76.3	74.7	0	0
NOV	211.17157	0.000	0.00000	0.000	76.3	74.7	0	0
DEC	220.74312	0.000	0.00000	0.000	76.3	74.7	0	0

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 3SDX

		- <i></i> c o	огі	и G - ·			H B	ATI	N G		E L	B C
					MUMIXAM					MONIXAM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	of max	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	187.14217	20 14	35.F	35.F	442.508	0.000				0.000	54120.	144.834
FEB	169.53336	9 14	38.F	33.F	445.851	0.000				0.000	48917.	144.834
MAR	195.15898	15 15	65.F	58.F	447.863	0.000				0.000	56282.	144.834
APR	184.72827	29 14	64.F	60.F	448.949	0.000				0.000	53106.	144.834
MAY	188.07011	18 14	67.F	59.F	451.222	0.000				0.000	54120.	144.834
MUL	189.68146	29 14	87.F	69.F	450.903	0.000		٠.		0.000	54187.	144.834
JUL	185.87202	26 14	80.F	64.F	451.809	0.000				0.000	53039.	144.834
٠.	196.80603	2 14	78.F	63.F	450.839	0.000				0.000	56282.	144.834
SEP	185.28709	14 14	73.F	62.F	452.945	0.000				0.000	53106.	144.834
OCT	184.36110	21 14	68.F	60.F	451.906	0.000				0.000	53039.	144.834
NOV	180.52327	1 14	71.F	68.F	450.781	0.000				0.000	52025.	144.834
DEC	187.99649	1 14	49.F	' 43.F	443.439	0.000				0.000	54120.	144.834
TOTAL	2235.162					0.000					642340.	
MAX					452.945					0.000		144.834

ENTECH ENGINEERING

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

READING, REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

WEATHER FILE- NEWARK, NJ

--ZONE COOLING----ZONE HEATING- --BASEBOARDS------PRE-HEAT---

					MANAGE AND AND AND AND AND AND AND AND AND AND		MAXIMUM		MAXIMUM	
			MAXIMUM	gov	MAXIMUM ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT	
		ZONE COIL	ZONE COIL	ZONE COIL HEATING	HEATING	HEATING	HEATING	COIL	COIL	
		COOLING	COOLING	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	
		ENERGY (MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	
	MONTH	(FISTO)	(ABTO) III.)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
	jan	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	PEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	JU.	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
:	AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	oct	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	
	DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000	

	TOTAL	0.000		0.000		0.000		0.000		
	MAX		0.000		0.000		0.000		0.000	

REPORT- SS-K SPACE TEMPERATURE SUMMARY

3SDX

MONTH	ALL BOURS	ERAGE COOLING HOURS	S P A C HEATING HOURS (F)	FAN ON HOURS	FAN OFF HOURS (F)	AVERAGE THE BETWEEN OUTDOORS ROOM AIR ALL HOURS	EMPERATURE I BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE. BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEM BETWEEN OUTDOOR& ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT.)
JAN	75.17	75.17		75.17	0.00	-43.81	-43.81	0.00		1358.22	-0.00001
FEB	75.18	75.18		75.18	0.00	-41.96	-41.96	0.00		1174.75	-0.00003
MAR	75.23	75.23		75.23	0.00	-34.73	-34.73	0.00		1076.49	-0.00003
APR	75.20	75.20		75.20	0.00	-22.30	-22.30	0.00		670.88	0.00011
MAY	75.17	75.17		75.17	0.00	-12.89	-12.89	9.00		448.60	0.00066
JUN	75.22	75.22		75.22	0.00	-3.01	-3.01	0.00		217.23	0.00251
	75.15	75.15		75.15	0.00	0.32	0.32	0.00		170.89	0.00317
AUG	75.22	75.22		75.22	0.00	-1.73	-1.73	0.00		195.61	0.00369
SEP	75.19	75.19		75.19	0.00	-8.20	-8.20	0.00		265.64	0.00235
OCT	75.14	75.14		75.14	0.00	-18.06	-18.06	0.00		564.09	0.00060
NOV	75.17	75.17		75.17	0.00	-28.94	-28.94	0.00		868.57	0.00029
DEC	75.18	75.18		75.18	0.00	-39.63	-39.63	0.00		1228.58	-0.00004
ANNUA	L 75.19	75.19	0.00	75.19	0.00	-21.14	-21.14	0.00	0.00	8239.58	0.00111

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-F ZONE DEMAND SUMMARY IN 3SDX FOR 3LDX

WEATHER FILE- NEWARK, NJ

----DEMANDS------BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

молтн	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
JAN	149.73132	0.000	0.00000	0.000	76.3	74.7	0	0
FEB	135.74727	0.000	0.00000	0.000	76.4	74.7	0	0
MAR	157.72980	0.000	0.00000	0.000	76.5	74.7	0	0
APR	148.31773	0.000	0.00000	0.000	76.4	74.7	0	0
MAY	149.80225	0.000	0.00000	0.000	76.3	74.7	0	0
NUL	151.66167	0.000	0.00000	0.000	76.3	74.7	0	0
JUL (146.75827	0.000	0.00000	0.000	76.3	74.7	0	0
AUG	157.35567	0.000	0.00000	0.000	76.3	74.7	0	0
SEP	147.88680	0.000	0.00000	0.000	76.4	74.7	0	0
OCT	146.33066	0.000	0.00000	0.000	76.3	74.7	0	0
VOV	144.05949	0.000	0.00000	0.000	76.3	74.7	0	0
DEC	150.58902	0.000	0.00000	0.000	76.3	74.7	0	0

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

4SDX

					H E A T I N G					E L E C			
						MAXIMUM					MUMIXAM	ELEC-	MUMIXAM
	COOLING	TI	ME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF M	AX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY I	HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
jan	263.09409	25	14	52.F	41.F	1034.193	0.000				0.000	153775.	405.473
FEB	257.19397	14	14	51.F	41.F	1088.319	0.000				0.000	138988.	405.473
MAR	356.41827	16	14	67.F	50.F	1242.498	0.000				0.000	159607.	405.473
APR	415.84497	15	15	73.F	55.F	1457.977	0.000				0.000	150790.	405.473
MAY	485.99478	25	12	72.F	54.F	1491.360	0.000				0.000	153774.	405.473
JUN	555.14801	13	14	96.F	73.F	1591.747	0.000		•		0.000	153706.	405.473
JUL	566.44348	25	14	84.F	65.F	1628.274	0.000				0.000	150858.	405.473
AUG	575.93042	12	13	84.F	70.F	1604.572	0.000				0.000	159607.	405.473
SEP	497.02283	7	14	82.F	64.F	1460.793	0.000				0.000	150790.	405.473
OCT	422.63153	14	14	75.F	61.F	1368.694	0.000			,	0.000	150858.	405.473
NOV	340.81183	2	14	77.F	70.F	1298.614	0.000				0.000	147874.	405.473
DEC	290.52545	2	14	64.F	53.F	1171.184	0.000				0.000	153775.	405.473
TOTAL	5027.062						0.000					1824458.	
MAX						1628.274					0.000		405.473

ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 19 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH ENTECH ENGINEERING DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 READING,

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR 4SDX

MAX

WEATHER FILE- NEWARK, NJ

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0.000

	ZONE CO	O L I N G	-ZONE HE	ATING-	B A S E B O	A R D S	P R E - H	E A T
		MAXIMUM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC TOTAL	0.0000		0.000		0.000		0.000	

0.000

0.000

0.000

REPORT- SS-K SPACE TEMPERATURE SUMMARY 4SDX

молтн	A V ALL HOURS	ERAGE COOLING HOURS (F)	S P A (HEATING HOURS (F)	FAN ON HOURS	FAN OFF HOURS (F)	AVERAGE TI BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	EMPERATURE 1 BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEM BETWEEN OUTDOOR& ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT.)
JAN	74.44	74.48		74.44	0.00	-43.08	-43.08	0.00		1335.48	0.00000
FEB	74.41	74.54		74.41	0.00	-41.19	-41.19	0.00		1153.42	-0.00002
MAR	74.61	74.61		74.61	0.00	-34.11	-34.11	0.00		1057.39	-0.00001
APR	74.74	74.74		74.74	0.00	-21.84	-21.84	0.00		657.38	0.00013
MAY	74.83	74.83		74.83	0.00	-12.55	-12.55	0.00		439.51	0.00069
JUN	74.98	74.98		74.98	0.00	-2.77	-2.77	0.00		213.07	0.00257
וטנ	74.96	74.96		74.96	0.00	0.51	0.51	0.00		168.80	0.00321
AUG	74.98	74.98		74.98	0.00	-1.49	-1.49	0.00		192.79	0.00374
SEP	74.88	74.88		74.88	0.00	-7.89	-7.89	0.00		257.71	0.00239
OCT	74.72	74.72		74.72	0.00	-17.64	-17.64	0.00		551.03	0.00063
NOV	74.61	74.61		74.61	0.00	-28.38	-28.38	0.00		851.84	0.00031
DEC	74.50	74.50		74.50	0.00	-38.95	-38.95	0.00		1207.55	-0.00002
ANNUA	L 74.72	74.74	0.00	74.72	0.00	-20.67	-20.67	0.00	0.00	8085.99	0.00114

ENTECH ENGINEERING

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

READING,

REPORT- SS-F ZONE DEMAND SUMMARY IN 4SDX

FOR 4LDX

WEATHER FILE- NEWARK, NJ

---DEMANDS------BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

	HEAT	HEAT		MAXIMUM	MAXIMUM	MINIMUM		
	EXTRACTION	ADDITION	BASEBOARD	BASEBOARD	ZONE	ZONE	HOURS	HOURS
	ENERGY	ENERGY	ENERGY	LOAD	TEMP	TEMP	UNDER	UNDER
MONTH	(MBTU)	(MBTU)	(MBTU)	(KBTU/HR)	(F)	(F)	HEATED	COOLED
JAN	158.36589	-31.797	0.00000	0.000	75.3	73.3	0	0
FEB	158.89586	-25.314	0.00000	0.000	75 . 4	72.1	0	0
MAR	227.06105	-7.621	0.00000	0.000	75.6	74.1	0	0
APR	284.07574	-1.363	0.00000	0.000	75.9	74.1	0	0
MAY	346.84781	-0.013	0.00000	0.000	75.9 .	74.2	0	0
JUN	418.25571	0.000	0.00000	0.000	76.0	74.4	0	0
10IT	425.31116	0.000	0.00000	0.000	76.0	74.4	0	0
AUG	434.02057	0.000	0.00000	0.000	76.0	74.3	0	0
SEP	361.56223	0.000	0.00000	0.000	75.9	74.3	0	0
OCT	284.46936	-0.378	0.00000	0.000	75.7	74.2	0	0
NOV	212.56813	-4.977	0.00000	0.000	75.6	74.1	0	0
DEC	174.80289	-21.092	0.00000	0.000	75.5	73.7	0	0

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 1SHWONLY WEATHER FILE- NEWARK, NJ

		c o	OLI	NG				нЕ	АТІ	NG		E L	E C
	COOLING	TIME	DRY-	WET~	MAXIMUM COOLING	HEATING	Tr.	'IME	DRY-	WET-	MAXIMUM HEATING	ELEC- TRICAL	MAXIMUM ELEC
ľ	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY		MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)		HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
												·	
JAN	0.00000				0.000	-174.148	6	13	22.F	16.F	-514.496	15922.	59.104
FEB	0.00000				0.000	-150.199	21	11	27.F	22.F	-514.496	14397.	59.104
MAR	0.00000				0.000	-124.927	5	1	29.F	24.F	-489.862	16895.	59.104
APR	0.00000				0.000	-41.582	9	4	32.F	27.F	-419.899	15738.	59.104
MAY	0.00000				0.000	-4.892	4	2	40.F	35.F	-204.153	15922.	59.104
NUL	0.00000				0.000	0.000			•		0.000	16224.	59.104
JUL _	0.00000				0.000	0.000					0.000	15435.	59.104
AUG	0.00000				0.000	0.000					0.000	16895.	59.104
SEP	0.00000				0.000	0.000					0.000	15738.	59.104
OCT	0.00000				0.000	-10.179	25	6	41.F	36.F	-293.686	15436 <i>.</i>	59.104
NOV	0.00000				0.000	-74.748	25	6	38.F	37.F	-440.567	15252.	59.104
DEC	0.00000				0.000	-164.725	24	13	33.F	29.F	-502. 4 72	15922.	59.104
TOTAL	0.000					-745.399						189781.	

-514.496 59.104

0.000

MAX

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

1SHWONLY

WEATHER FILE- NEWARK, NJ

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--ZONE COOLING----ZONE HEATING---BASEBOARDS------PRE-HEAT---

		MAXIMUM		MOMIXAM		MUMIXAM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
į	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	-174.14850	-514.496	0.00000	0.000
TIPD.	0.00000	0.000	0.00000	0.000	-150.19852	-514.496	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	-130.17632	-214.430	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	-124.92693	-489.862	0.00000	0.000
ļ								
APR	0.00000	0.000	0.00000	0.000	-41.58194	-419.899	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	-4.89179	-204.153	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
1								
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
	0.0000	0.000	0.00000	2	********	3.000	0.0000	0.000
OCT	0.00000	0.000	0.0000	0.000	-10.17935	-293.686	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	-74.74754	-440.567	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	-/4./4/54	-440.367	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	-164.72507	-502.472	0.00000	0.000
					***			
TOTAL	0.000		0.000		-745.399		0.000	
MAX		0.000		0.000		-514.496		0.000

REPORT- SS-K SPACE TEMPERATURE SUMMARY

1SHWONLY -----

WEATHER FILE- NEWARK, NJ

	A V	ERAGE	SPAG	CE TI	зм Р	AVERAGE TI	EMPERATURE 1	DIFFERENCE	SUMMED TEMP DIFFERENCE			
	A			- L		BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	BETWEEN OUTDOOR& ROOM AIR	HUMIDITY RATIO DIFFERENCE BETWEEN	
	ALL	COOLING	HEATING	FAN ON	FAN OFF	ALL HOURS	FAN ON HOURS	FAN OFF	HEATING HOURS	ALL HOURS	OUTDOOR AND	
MONTH	HOURS (F)	HOURS (F)	HOURS (F)	HOURS (F)	(F)	(F)	(F)	(F)	(F)	(F)	ROOM AIR (FRAC.OR MULT. )	
JAN	68.65		68.55	68.65	0.00	-37.29	-37.29	0.00	1108.80	1156.08	-0.00024	
FEB	69.01		68.90	69.01	0.00	-35.79	-35.79	0.00	948.70	1002.03	-0.00024	
MAR	69.56		69.24	69.56	0.00	-29.06	-29.06	0.00	813.52	900.81	-0.00023	
APR	72.34		69.47	72.34	0.00	-19.44	-19.44	0.00	312.97	583.31	-0.00024	
MAY	75.61		69.62	76.66	74.62	-13.33	-14.00	-12.69	47.79	428.51	-0.00190	
JUN	87.78			0.00	87.78	-15.57	0.00	-15.57			-0.00076	
lor	91.21			0.00	91.21	-15.74	0.00	-15.74			0.00019	
AUG	91.10			0.00	91.10	-17.61	0.00	-17.61			0.00073	
SEP	82.46			0.00	82.46	-15.47	0.00	-15.47			-0.00135	
OCT	71.92		69.66	72.43	71.37	-14.83	-14.96	-14.69	89.43	463.25	-0.00240	
NOA	70.87		69.43	70.87	0.00	-24.64	-24.64	0.00	563.31	739.34	-0.00028	
DEC	69.20		69.09	69.20	0.00	-33.66	-33.66	0.00	1007.61	1043.34	-0.00021	

ANNUAL 76.69 0.00 69.09 70.60 85.12 -22.64 -27.71 -15.61 4892.13 8282.66 -0.00058

REPORT- SS-F ZONE DEMAND SUMMARY IN 1SHWONLY

FOR 1LHWONLY

WEATHER FILE- NEWARK, NJ

---DEMANDS-----BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
JAN	0.02220	-0.227	-174.14850	-514.496	72.4	57.2	61	0
FEB	0.02024	-0.227	-150.19852	-514.496	71.9	61.7	30	0
MAR	0.02285	-0.114	-124.92693	-489.862	75.3	68.1	0	0
APR	0.02337	-0.342	-41.58194	-419.899	85.3	68.4	0	0
MAY	0.01259	-0.083	-4.89179	-204.153	91.1	69.2	0	0
JUN	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
ur	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
AUG	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
SEP	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
OCT	0.01288	-0.113	-10.17935	-293.686	81.7	68.9	0	0
NOV	0.02295	-0.053	-74.74754	-440.567	83.8	68.3	0	0
DEC	0.02258	-0.080	-164.72507	-502.472	73.9	68.0	0	0

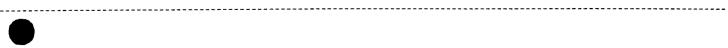
REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 04SHWELEV ------

	<del>.</del>				нЕ	ATI	N G		E L	E C			
MONTH	COOLING ENERGY (MBTU)	TIME OF MAX DY HR	DRY- BULB TEMP	WET- BULB TEMP	MAXIMUM COOLING LOAD (KBTU/HR)	HEATING ENERGY (MBTU)	OF :		DRY- BULB TEMP	WET- BULB TEMP	MAXIMUM HEATING LOAD (KBTU/HR)	ELEC- TRICAL ENERGY (KWH)	MAXIMUM ELEC LOAD (KW)
JAN	0.00000				0.000	-20.829	5	20	15.F	12.F	-70.170	794.	2.940
FEB	0.00000				0.000	-17.583	20	3	10.F	7.F	-64.515	718.	2.940
MAR	0.00000				0.000	-15.075	5	1	29.F	24.F	-41.844	842.	2.940
APR	0.00000				0.000	-6.853	9	4	32.F	27.F	-37.553	785.	2.940
MAY	0.00000				0.000	-1.336	4	2	40.F	35.F	-23.584	792.	2.940
JUN	0.00000				0.000	0.000			-		0.000	806.	2.936
JUL	0.00000				0.000	0.000					0.000	767.	2.936
AUG	0.00000				0.000	0.000					0.000	839.	2.936
SEP	0.00000				0.000	0.000					0.000	782.	2.936
OCT	0.00000				0.000	-2.401	25	6	41.F	36.F	-28.578	768.	2.940
NOV	0.00000				0.000	-10.923	25	6	38.F	37.F	-35.851	760.	2.940
DEC	0.00000				0.000	-18.807	26	7	25.F	24.F	-42.089	794.	2.940
TOTAL	0.000					-93.808						9447.	<del>-</del>
MAX					0.000						-70.170		2.940

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

04SHWELEV

WEATHER FILE- NEWARK, NJ



--ZONE COOLING----ZONE HEATING---BASEBOARDS------PRE-HEAT---

MONTH	ZONE COIL COOLING ENERGY (MBTU)	MAXIMUM ZONE COIL COOLING LOAD (KBTU/HR)	ZONE COIL HEATING ENERGY (MBTU)	MAXIMUM ZONE COIL HEATING LOAD (KBTU/HR)	BASEBOARD HEATING ENERGY (MBTU)	MAXIMUM BASEBOARD HEATING LOAD (KBTU/HR)	PRE-HEAT COIL ENERGY (MBTU)	MAXIMUM PRE-HEAT COIL LOAD (KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	-20.82914	-70.170	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	-17.58308	-64.515	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	-15.07471	-41.844	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	-6.85345	-37.553	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	-1.33639	-23.584	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUL.	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	-2.40120	-28.578	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	-10.92310	-35.851	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	-18.80719	-42.089	0.00000	0.000
TOTAL	0.000		0.000		-93.808		0.000	
MAX		0.000		0.000		-70.170		0.000

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REPORT- SS-K SPACE TEMPERATURE SUMMARY

04SHWELEV

WEATHER FILE- NEWARK, NJ

	AVERAGE SPACE TEMP				S M P	AVERAGE TE BETWEEN OUTDOOR& ROOM AIR	EMPERATURE I BETWEEN OUTDOOR& ROOM AIR	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR	SUMMED TEM BETWEEN OUTDOOR& ROOM AIR	1P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR	HUMIDITY RATIO DIFFERENCE BETWEEN		
	ALL	COOLING	HEATING	fan on	FAN OFF	ALL	FAN ON	FAN OFF	HEATING	ALL	OUTDOOR AND		
	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	ROOM AIR		
MONTH	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(F)	(FRAC.OR MULT. )		
JAN	69.81		69.81	69.81	0.00	-38.45	-38.45	0.00	1190.08	1192.06	-0.00025		
FEB	69.83		69.82	69.83	0.00	-36.61	-36.61	0.00	1022.48	1024.94	-0.00025		
MAR	69.92		69.86	69.92	0.00	-29.41	-29.41	0.00	901.01	911.70	-0.00024		
APR	70.65		69.91	70.65	0.00	-17.75	-17.75	0.00	467.41	533.82	-0.00025		
MAY	70.72		69.94	73.13	68.45	-8.43	-10.47	-6.52	108.25	295.47	-0.00191		
JUN	78.85			0.00	78.85	-6.64	0.00	-6.64			-0.00076		
JUL	82.32			0.00	82.32	-6.85	0.00	-6.85			0.00019		
AUG	80.73			0.00	80.73	-7.24	0.00	-7.24			0.00073		
SEP	73.89			0.00	73.89	-6.90	0.00	-6.90			-0.00135		
OCT	66.80		69.94	70.58	62.76	-9.71	-13.11	-6.08	168.83	311.97	-0.00241		
NOV	70.26		69.89	70.26	0.00	-24.04	-24.04	0.00	696.10	721.09	-0.00029		
DEC	69.85		69.83	69.85	0.00	-34.30	-34.30	0.00	1057.10	1063.38	-0.00022		

ANNUAL 72.82 0.00 69.86 70.31 76.30 -18.77 -27.42 -6.79 5611.24 6937.85 -0.00059

ENTECH ENGINEERING READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 SDL RUN 1

REPORT- SS-F ZONE DEMAND SUMMARY IN 04SHWELEV

FOR 03LHWELV

WEATHER FILE- NEWARK, NJ

---DEMANDS-----BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

	HEAT	HEAT		MUMIXAM	MAXIMUM	MINIMUM		
	EXTRACTION	ADDITION	BASEBOARD	BASEBOARD	ZONE	ZONE	HOURS	HOURS
	ENERGY	ENERGY	ENERGY	LOAD	TEMP	TEMP	UNDER	UNDER
MONTH	(MBTU)	(MBTU)	(MBTU)	(KBTU/HR)	(F)	(F)	HEATED	COOLED
JAN	0.00364	-0.001	-4.18313	-14.594	70.7	69.5	0	0
FEB	0.00352	-0.001	-3.53836	-13.297	70.1	69.6	0	0
MAR	0.00457	-0.001	-3.04704	-8.564	73.8	69.7	0	0
APR	0.00568	-0.006	-1.38425	-7.710	79.9	69.7	0	0
MAY	0.00331	-0.004	-0.27111	-4.777	87.7*	69.8	0	0
JUN	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
Jui	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
AUG	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
SEP	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
OCT	0.00326	-0.005	-0.48151	-5.872	78.3	69.8	0	0
NOV	0.00511	-0.001	-2.18267	-7.380	79.2	69.8	0	0
DEC	0.00398	-0.001	-3.78570	-8.592	73.0	69.7	0	0

REPORT- SS-F ZONE DEMAND SUMMARY IN 04SHWELEV FOR 4LHWELV

WEATHER FILE- NEWARK, NJ

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MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
JAN	0.00367	-0.001	-4.09665	-11.793	70.4	69.6	0	0
FEB MAR	0.00358	-0.001	-3.42965 -2.88654	-11.325 -7.587	70.1	69.6 69.7	0	0
APR	0.00585	-0.006	-1.31647	-6.750	81.1	69.8	0	0
MAY JUN	0.00344	0.004	0.00000	-4.475 0.000	88.6 · 0.0	69.9 200.0	0	0
JUL	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
AUG SEP	0.00000	0.000	0.00000	0.000	0.0	200.0	0	0
OCT	0.00328	-0.004	-0.47515	-5.090	78.9	69.8	0	o
NOV	0.00506	-0.002	-2.19242 -3.66441	-6.589 -8.111	79.1	69.8 69.7	0	0

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR

0SDXHT

C O O L I N G							H E	ATI	N G -		E L	E C
					MAXIMUM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KM)
JAN	6.29961	14 14	40.F	32.F	28.470	-0.104	17 6	16.F	14.F	-2.105	4812.	13.637
FEB	5.40456	18 14	42.F	34.F	27.983	-0.208	7 6	14.F	12.F	-3.249	4350.	13.637
MAR	7.11239	16 14	67.F	50.F	30.886	-0.063	21 6	38.F	33.F	-1.730	5013.	13.637
APR	7.92157	21 14	80.F	62.F	33.024	0.000				0.000	4725.	13.637
MAY	10.49622	10 14	87.F	68.F	37.916	0.000				0.000	4812.	13.637
JUN	13.25140	30 14	91.F	74.F	40.430	0.000				0.000	4826.	13.637
JUL	14.51261	13 14	90.F	73.F	42.417	0.000				0.000	4711.	13.637
AUG	16.16099	18 14	93.F	72.F	43.749	0.000				0.000	5013.	13.637
SEP	14.58331	7 13	82.F	65.F	41.812	0.000				0.000	4725.	13.637
OCT	12.71041	14 14		61.F	38.581	0.000				0.000	4711.	13.637
NOV	10.02704	2 14		70.F	36.445	0.000				0.000	4624.	13.637
DEC	7.99638	2 14	64.F	53.F	32.338	0.000				0.000	4812.	13.637
TOTAL	126.476					-0.375					57132.	
MAX					43.749					-3.249		13.637

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR OSDXHT

WEATHER FILE- NEWARK, NJ

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--ZONE COOLING----ZONE HEATING---BASEBOARDS------PRE-HEAT---

		MUMIXAM		MAXIMUM		MAXIMUM		MAXIMUM
	ZONE COIL	ZONE COIL	ZONE COIL	ZONE COIL	BASEBOARD	BASEBOARD	PRE-HEAT	PRE-HEAT
	COOLING	COOLING	HEATING	HEATING	HEATING	HEATING	COIL	COIL
	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD	ENERGY	LOAD
MONTH	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)	(MBTU)	(KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	-0.10418	-2.105	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	-0.20847	-3.249	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	-0.06263	-1.730	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
		0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.0000	2.000	0.0000	
JUL	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
OCT	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
							*******	
TOTAL	0.000		0.000		-0.375		0.000	
MAX		0.000		0.000		-3.249		0.000

REPORT- SS-K SPACE TEMPERATURE SUMMARY

0SDXHT

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MONTH	A V ALL HOURS	E R A G E  COOLING HOURS (F)	S P A (	FAN ON HOURS	FAN OFF HOURS (F)	AVERAGE TE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	EMPERATURE I BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEM BETWEEN OUTDOOR& ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT. )
jan	74.15	74.30	72.94	74.15	0.00	-42.79	-42.79	0.00	185.63	1326.57	-0.00002
FEB	74.10	74.19	72.91	74.10	0.00	-40.87	-40.87	0.00	253.13	1144.49	-0.00006
MAR	74.27	74.41	72.95	74.27	0.00	-33.77	-33.77	0.00	100.98	1046.77	-0.00004
APR	74.48	74.56		74.48	0.00	-21.58	-21.58	0.00		649.89	0.00010
MAY	74.65	74.65		74.65	0.00	-12.37	-12.37	0.00		436.12	0.00066
JUN	74.84	74.84		74.84	0.00	-2.63	-2.63	0.00		212.96	0.00254
JUL	74.89	74.89		74.89	0.00	0.58	0.58	0.00		169.67	0.00319
AUG	74.99	74.99		74.99	0.00	-1.50	-1.50	0.00		193.28	0.00371
SEP	74.93	74.93		74.93	0.00	-7.94	-7.94	0.00		259.54	0.00236
OCT	74.79	74.79		74.79	0.00	-17.70	-17.70	0.00		553.23	0.00060
NOV	74.64	74.64		74.64	0.00	-28.42	-28.42	0.00		853.02	0.00028
DEC	74.49	74.51		74.49	0.00	-38.95	-38.95	0.00		1207.38	-0.00005
ANNUA	L 74.61	74.66	72.93	74.61	0.00	-20.56	-20.56	0.00	539.74	8052.93	0.00111

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

REPORT- SS-F ZONE DEMAND SUMMARY IN OSDXHT FOR OLDXHT

WEATHER FILE- NEWARK, NJ

---DEMANDS-----BASEBOARDS----TEMPERATURES----LOADS NOT MET--

MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
JAN	4.30086	-1.720	-0.10418	-2.105	75.3	72.9	0	0
FEB	3.73289	-1.690	-0.20847	-3.249	75.3	72.8	0	0
MAR	4.94455	-1.548	-0.06263	-1.730	75.4	72.9	0	0
APR	5.30856	-1.001	0.0000	0.000	75.5	73.2	0	0
MAY	6.90018	-0.242	0.00000	0.000	75.7 <b>*</b>	74.1	0	0
JUN	9.41340	0.000	0.00000	0.000	75.8	74.2	0	0
JUI	10.56290	0.000	0.00000	0.000	75.9	74.3	0	0
AUG	12.17193	0.000	0.00000	0.000	75.9	74.4	0	0
SEP	10.82609	0.000	0.00000	0.000	75.9	74.3	0	0
OCT	8.91010	0.000	0.00000	0.000	75.8	74.3	0	0
NOV	6.55245	-0.159	0.00000	0.000	75.7	74.1	٥	0
DEC	5.26215	-0.974	0.00000	0.000	75.5	73.7	Q	0

REPORT- SS-A SYSTEM MONTHLY LOADS SUMMARY FOR 0SDXNOHT WEATHER FILE- NEWARK, NJ

		c o	OLI	NG			H E	аті	N G		E L	E C
					MUMIXAM					MAXIMUM	ELEC-	MAXIMUM
	COOLING	TIME	DRY-	WET-	COOLING	HEATING	TIME	DRY-	WET-	HEATING	TRICAL	ELEC
	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	OF MAX	BULB	BULB	LOAD	ENERGY	LOAD
MONTH	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(MBTU)	DY HR	TEMP	TEMP	(KBTU/HR)	(KWH)	(KW)
JAN	14.36400	25 14	52.F	41.F	50.562	0.000				0.000	7287.	20.697
FEB	12.83054	11 14	52.F	50.F	50.644	0.000				0.000	6586.	20.697
MAR	16.48144	15 15	65.F	58.F	53.329	0.000				0.000	7593.	20.697
APR	17.45968	22 14	68.F	60.F	56.450	0.000				0.000	7155.	20.697
MAY	20.68633	10 14	87.F	68.F	61.186	0.000				0.000	7287.	20.697
JUN	23.55266	14 14	88.F	74.F	63.584	0.000				0.000	7308.	20.697
JUL	24.38587	13 14	90.F	73.F	65.283	0.000				0.000	7133.	20.697
AUG	26.03597	18 14	93.F	72.F	66.099	0.000				0.000	7593.	20.697
SEP	23.36196	20 14	83.F	72.F	64.302	0.000				0.000	7155.	20.697
OCT	20.90982	21 14	68.F	60.F	60.739	0.000				0.000	7133.	20.697
NOV	17.93601	2 14	77.F	70.F	60.514	0.000				0.000	7002.	20.697
DEC	16.11394	2 14	64.F	53.F	54.170	0.000				0.000	7287.	20.697
TOTAL	234.119					0.000					86517.	
MAX					66.099					0.000		20.697

REPORT- SS-B SYSTEM MONTHLY LOADS SUMMARY FOR

OSDXNOHT

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ZONE COOLING	ZONE	HEATING -	BASEBOARDS	PRE-HEAT
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MONTH	ZONE COIL COOLING ENERGY (MBTU)	MAXIMUM ZONE COIL COOLING LOAD (KBTU/HR)	ZONE COIL HEATING ENERGY (MBTU)	MAXIMUM ZONE COIL HEATING LOAD (KBTU/HR)	BASEBOARD HEATING ENERGY (MBTU)	MAXIMUM BASEBOARD HEATING LOAD (KBTU/HR)	PRE-HEAT COIL ENERGY (MBTU)	MAXIMUM PRE-HEAT COIL LOAD (KBTU/HR)
JAN	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
FEB	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
MAR	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
APR	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
MAY	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
JUN	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
lar	0.00000	0.000	0.0000	0.000	0.0000	0.000	0.00000	0.000
AUG	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
SEP	0.00000	0.000	0.00000	0.000	0.0000	0.000	0.00000	0.000
oct	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
NOV	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
DEC	0.00000	0.000	0.00000	0.000	0.00000	0.000	0.00000	0.000
TOTAL	0.000		0.000		0.000		0.000	<b></b>
MAX		0.000		0.000		0.000		0.000

OSDXNOHT

REPORT- SS-K SPACE TEMPERATURE SUMMARY 

MONTH	A V ALL HOURS (F)	E R A G E  COOLING HOURS (F)	S P A G	CETEFAN ON HOURS	FAN OFF HOURS (F)	AVERAGE TO BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	EMPERATURE I BETWEEN OUTDOOR& ROOM AIR FAN ON HOURS (F)	DIFFERENCE BETWEEN OUTDOOR& ROOM AIR FAN OFF HOURS (F)	SUMMED TEM BETWEEN OUTDOOR& ROOM AIR HEATING HOURS (F)	P DIFFERENCE BETWEEN OUTDOOR& ROOM AIR ALL HOURS (F)	HUMIDITY RATIO DIFFERENCE BETWEEN OUTDOOR AND ROOM AIR (FRAC.OR MULT. )
JAN	74.60	74.60		74.60	0.00	-43.24	-43.24	0.00		1340.47	-0.00002
FEB	74.59	74.59		74.59	0.00	-41.37	-41.37	0.00		1158.46	-0.00005
MAR	74.69	74.69		74.69	0.00	-34.19	-34.19	0.00		1059.80	-0.00004
APR	74.76	74.76		74.76	0.00	-21.86	-21.86	0.00		657.86	0.00010
MAY	74.86	74.86		74.86	0.00	-12.58	-12.58	0.00		440.84	0.00066
NUL	75.00	75.00		75.00	0.00	-2.79	-2.79	0.00		214.41	0.00253
JUL	5.00	75.00		75.00	0.00	0.47	0.47	0.00		169.89	0.00319
AUG	75.07	75.07		75.07	0.00	-1.58	-1.58	0.00		194.01	0.00370
SEP	75.00	75.00		75.00	0.00	-8.01	-8.01	0.00		261.06	0.00236
OCT	74.87	74.87		74.87	0.00	-17.78	-17.78	0.00		555.71	0.00060
NOV	74.78	74.78		74.78	0.00	-28.55	-28.55	0.00		856.88	0.00028
DEC	74.68	74.68		74.68	0.00	-39.13	-39.13	0.00		1212.97	-0.00005
ANNU	AL 74.83	74.83	0.00	74.83	0.00	-20.78	-20.78	0.00	0.00	8122.36	0.00111

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1

REPORT- SS-F ZONE DEMAND SUMMARY IN OSDXNOHT FOR OLDXONLY

WEATHER FILE- NEWARK, NJ

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---DEMANDS-----BASEBOARDS--- --TEMPERATURES----LOADS NOT MET--

MONTH	HEAT EXTRACTION ENERGY (MBTU)	HEAT ADDITION ENERGY (MBTU)	BASEBOARD ENERGY (MBTU)	MAXIMUM BASEBOARD LOAD (KBTU/HR)	MAXIMUM ZONE TEMP (F)	MINIMUM ZONE TEMP (F)	HOURS UNDER HEATED	HOURS UNDER COOLED
JAN	9.40461	-0.585	0.00000	0.000	75.6	74.1	0	0
FEB	8.52285	-0.699	0.00000	0.000	75.6	74.0	0	0
MAR	11.21039	-0.276	0.00000	0.000	75.7	74.1	0	0
APR	12.09204	-0.049	0.00000	0.000	75.8	74.2	0	0
MAY	14.96230	0.000	0.00000	0.000	75.8 •	74.3	0	0
JUN	17.82047	0.000	0.00000	0.000	75.9	74.4	0	0
JUL	18.48841	0.000	0.00000	0.000	76.0	74.5	0	0
AUG	20.07511	0.000	0.00000	0.000	76.0	74.4	0	0
SEP	17.75377	0.000	0.00000	0.000	75.9	74.4	0	0
OCT	15.23885	0.000	0.00000	0.000	75.8	74.3	0	0
NOA	12.51310	0.000	0.00000	0.000	75.8	74.2	0	0
DEC	10.74324	-0.172	0.00000	0.000	75.7	74.1	0	0

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WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
STM-BOILER	869.3	100.0
DHW-HEATER	0.0	0.0
		=======================================
LOAD SATISFIED	869.3	100.0
TOTAL LOAD ON PLANT	869.3	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
		~~~~~~~~~~~~
HERM-REC-CHLR	16276.7	100.0
LOAD SATISFIED	16276.7	100.0
TOTAL LOAD ON PLANT	16276.7	
		•
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
ELECTRICITY	26099.9	100.0
	202053555222	

LOAD SATISFIED 26099.9
TOTAL LOAD ON PLANT 26099.9

100.0

REPORT- PS-D PLANT LOADS SATISFIED

WEATHER FILE- NEWARK, NJ

_____(CONTINUED)-----

SUMMARY OF LOADS MET

	TOTAL	LOAD	TOTAL	PEAK	HOURS
TYPE OF LOAD	LOAD	SATISFIED	OVERLOAD	OVERLOAD	OVERLOADED
	(MBTU)	(MBTU)	(MBTU)	(MBTU)	
HEATING LOADS	869.3	869.3	0.000	0.000	0
COOLING LOADS	16276.7	16276.7	0.027	0.018	2
ELECTRICAL LOADS	26099.9	26099.9	0.000	0.000	0

RKA LS_1		PA 196 HOURLY-REPOR		0.05 FT. MON	MOUTH - MYER	CENTER, NJ	FTMOCA3 - D	X COOL W/HW	& PER HW11	PAGE 1- 1
MDDHH	lsdxht	1SDX	2SDX	3SDX	4SDX	1SHWONLY	04SHWELE V	0SDXHT	OSDXNOHT	
	TOT FAN ELECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN ELECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	CA3
	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	EXISTIN ON PEA
ONTHLY	SUMMARY (J.	AN)								一人(フェル
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	3 10 - 1
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1,474	2.200	Ch VEA
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.197	0.983	371.498	554.299	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	- ,
40NTHLY	SUMMARY (F	RB)								
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1,474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1,474	2.200	
SM	4606.056	2345.709	4937.974	3368.748	12332.442	0.178	0.889	336.118	501.509	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
AONTHT.Y	SUMMARY (M	IAR)								
MN	20,202	10.288	21.658	14,775	54.090	0.001	0.004	1.474	2.200	
MIX	20,202	10.288	21.658	14,775	54.090	0.001	0.004	1.474	2.200	
SM	5575.751	2839.543	5977.548	4077,958	14928.747	0.215	1.076	406.879	607.090	
AV	20.202	10.288	21.658	14,775	54.090	0.001	0.004	1.474	2.200	
MONTHT.Y	SUMMARY (A	(DR)								
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20,202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.197	0.983	371.498	554.299	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHEY	SUMMARY (M	(AY)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.094	0.468	371.498	554.299	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	
MONTHLY	SUMMARY (J	TUN)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	5333.328	2716.085	5717.655	3900.655	14279.671	0.000	0.000	389.189	580.694	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MONTHLY	SUMMARY (J	TUL)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2,200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1,474	2.200	
SM	4848.480	2469.168	5197.868	3546.050	12981.519	0.000	0.000	353.808	527.904	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	

ENTECH ENGINEERING 19603 READING, PA

SM

ΑV

61090.844

20.202

31111.520

10.288

65493.133

21.658

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 7/2/1996 10:44:58 SDL RUN 1

4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW - 1BTUH RS 1 - HOURLY-REPORT PAGE 2- 1 1SDX 2SDX 3SDX 4SDX 1SHWONLY 04SHWKLR OSDXHT OSDXNOHT TOT FAN TOT PAN TOT FAN TOT PAN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN RIRCTRIC RIRCTRIC RIRCTRIC RIRCTRIC RI.RCTRIC RIRCTRIC RLECTRIC BLECTRIC BLECTRIC KW KW KW KW KW KW KW KW KW ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) MONTHLY SUMMARY (AUG) 10.288 21.658 14.775 MN 20.202 54.090 0.000 0.000 1.474 2 200 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2,200 SM 5575.751 2839.543 5977.548 4077.958 14928.747 0.000 0.000 406.879 607.090 ΔV 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 MONTELY SUMMARY (SEP) 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 MX 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 2592.626 5457.761 3723.353 SM 5090.904 13630.595 0.000 0.000 371.498 554.299 21.658 10.288 A۷ 54.090 0.000 0.000 1.474 2,200 MONTHLY SUMMARY (OCT) 20.202 10.288 21.658 14.775 54.090 0.000 MN 0.000 1.474 2.200 ΜX 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 SM 4848.480 2469.168 5197.868 3546.050 12981.519 0.103 0.515 353.808 527.904 ΔV 20 202 10.288 21.658 14 775 54 090 0.000 0.002 1.474 2.200 MONTHLY SUMMARY (NOV) MN 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 21.658 5197.868 MX 20.202 10.288 14.775 54.090 0.001 0.004 1.474 2.200 2469.168 12981.519 4848.480 3546.050 0.936 SM 0.187 353.808 527.904 20.202 10.288 21.658 0.001 0.004 1.474 2.200 MONTHLY SUMMARY (DEC) 20.202 10.288 21.658 54.090 0.001 0.004 1.474 2.200 ΜX 20.202 10.288 21.658 5457.761 14.775 54.090 0.001 0.004 1.474 2.200 2592.626 SM 5090.904 3723.353 13630.595 0.197 0.983 371.498 554.299 AV 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2,200 YEARLY SUMMARY 20.202 MN 10.288 21.658 14.775 54.090 0.000 0.000 1 474 2 200 MX 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200

44680.230 163567.141

54.090

14.775

1.367

0.000

6.833

0 002

4457.981

1.474

6651.591

ENTRCH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10:44:58 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

HERM-REC-CHLR

3.892 1 1

вопіьмвиц	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
STM-BOILER	0.591 1 1					
DHW-HBATER	0.000 1 1					

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:44:58 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PS-B MONTHLY PEAK AND TOTAL ENERGY USE WEATHER FILE- NEWARK, NJ

МО	UTILITY-	BLECTRICITY	FUEL-OIL	NATURAL-GAS
	TOTAL (MBTU)	2153.016	287.883	0.000
JAN	PRAK (KBTU)	5076.708	767.666	0.000
	DY/HR	13/14	5/20	31/24
	•			
	TOTAL (MBTU)	1951.146	248.988	0.000
FKB	PRAK (KBTU)	5085.388	764.186	0.000
	DY/HR	15/14	20/3	28/24
	TOTAL (MBTU)	2249.282	217.413	0.000
MAR	PKAK (KBTU)	5114.029	709.479	0.000
	DY/HR	16/14	5/ 1	31/24
	TOTAL (MBTU)	2154.637	82.869	0.000
APR	PRAK (KBTU)	5172.894	626.246	0.000
AFR	DY/HR	21/14	9/4	30/ 1
	D1/1110	2-,	-, -	
	TOTAL (MBTU)	2219.887	13.871	0.000
MAY	PEAK (KBTU)	5229.586	356.551	0.000
	DY/HR	10/14	4/2	31/ 1
	TOTAL (MBTU)	2223.483	0.000	0.000
JUN	PRAK (KBTU)	5290.973	0.000	0.000
	DY/HR	13/14	30/ 1	30/ 1
		2217.316	0.000	0.000
JUL	TOTAL (MBTU) PEAK (KBTU)	5249.647	0.000	0.000
300	DY/HR	13/13	31/ 1	31/ 1
	D1/1110	25, 25	, -	- -, -
	TOTAL (MBTU)	2308.327	0.000	0.000
AUG	PRAK (KBTU)	5269.803	0.000	0.000
	DY/HR	18/14	31/ 1	31/ 1
	TOTAL (MBTU)	2174.473	0.000	0.000
SEP	PRAK (KBTU)	5198.902	0.000 30/ 1	30/1
	DY/HR	7/14	30/ 1	30/ 1
	TOTAL (MBTU)	2173.409	24.376	0.000
OCT	PRAK (KBTU)	5158.363	469.762	0.000
	DY/HR	14/14	25/6	31/24
	TOTAL (MBTU)	2108.344	139.934	0.000
NOA	PEAK (KBTU)	5156.199	647.688	0.000
	DY/HR	2/14	25/ 6	30/24
	momar (ammr)	2166.566	274.207	0.000
DEC	TOTAL (MBTU) PRAK (KBTU)	5098.862	721.583	0.000
DBC	DY/HR	2/14	24/13	31/24
	DI/RK	2/14	24,15	3-,
	ONE YEAR	26099.888	1289.541	0.000
	USE/PEAK	5290.973	767.666	0.000

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 7/2/1996 10:44:58 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD		

STM-BOILER	869.3	100.0		
DHW-HEATER	0.0	0.0		
	**********	************		
LOAD SATISFIED	869.3	100.0		
TOTAL LOAD ON PLANT	869.3			
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD		
HERM-REC-CHLR	16276.7	100.0		
	24272222222	************		
LOAD SATISFIED	16276.7	100.0		
TOTAL LOAD ON PLANT	16276.7			
BLECTRICAL LOADS	MRTTI STIPPILIKO	PCT OF TOTAL LOAD		

BLECTRICITY	26099.9	100.0		
	*********	非国际股票的基本的 现代的		
LOAD SATISFIED	26099.9	100.0		
TOTAL LOAD ON PLANT	26099.9			

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS COOLING LOADS BLECTRICAL LOADS	869.3	869.3	0.000	0.000	0
	16276.7	16276.7	0.027	0.018	2
	26099.9	26099.9	0.000	0.000	0

	ENTECH ENGINE				DEVELOPMENT INC			0:44:58	PDL RU	IN 1
RP_1		LY-REPORT						P2	AGE 1-	1
MMDDHH	HERM-REC -CHLR BLBCTRIC	HERM-REC -CHLR CONDENSR	STM-BOIL ER ELECTRIC	STM-BOIL ER FUEL		• • • • • • • • • • • •	*********			
		PAN BLEC	USB	USB						
	BTU/HR	BTU/HR	BTU/HR	BTU/HR						
	(3)	(18)	(3)	(4)						
MONTHLY	SUMMARY (JAN)									
MIN	937605.	583796. 583796.	515.	9936.						
MX	1082899.	583796.	12991.	759552.						
SM	256205232.	147116464.								
AV	1016687.	583796.	9825.	321669.						
MONTHLY	SUMMARY (FEB)									
MN	928071.	583796.	515.	9936.						
MX	1088467.	583796.	12991.	658489.						
SM	233673600.		2016624.	52371964.						
AV	1024884.		8845.	229702.						
MONTHLY	SUMMARY (MAR)									
MN	957016.	583796.	515.	9936.						
MX	1122546.	583796.								
SM	287182592.	161127568.		54446080.						
	1040517.		7361.	197268.						
MONTHLY	SUMMARY (APR)									
MIN	966029.	583796.	515.	9936.						
MX	1183155.	583796. 583796.	515. 12991.	488100.						
SM		147116464.	693315.	15506258.						
AV	1065115.		2751.	61533.						
MONTHLY	SUMMARY (MAY)									
MN	985677.	583796.	0. 12991.	0.						
MIX	1238328.					•				
SM	275527424.	147116464.	116774.	2262290.						
AV	1093363.	583796.	463.	8977.						
MONTHLY	SUMMARY (JUN)									
MIN .	1016320.		0.	0.						
MX	1304448.	583796.	0.	0.						
SM	1304448. 298948832.	154122016.	0.	0.						
AV	1132382.		0.	0.						
MONTHLY	SUMMARY (JUL)									
MN	1026370.			0.						
MX	1258694.	583796.	0.	0.	•					
SM	274606400.	583796. 140110912.	0.	0.						
AV	1144193.	583795.	0.	0.	•					

RP_1	BADING, PA	NEERING 19603 URLY-REPORT	EZDOR - ELI 4130.05 FT.	TE SOFTWARE	DEVELOPMENT INC MYER CENTER, NJ	DOE-2.: FTMOCA3 - DX	1D 7/2/1996 COOL W/HW & PE	R HW1BTUH	PDL RU PAGE 2-	
	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL						
	-CHLR	-CHLR	ER	BR				•		
	BLECTRIC	CONDENSE	BLECTRIC	FUEL						
	USE	FAN BLEC	USE	USE			•			
	BTU/HR	BTU/HR	BTU/HR	BTU/HR						
	(3)	(18)	(3)	(4)						
MONTH	LY SUMMARY (AUG									
MIN	1013925.	583796.	٥.	. 0.						
MX		583796.	0.	0.						
SM	315750784.	161127568.	0.	0.						
VA	1144025.	583796.	0.	0.						
MONTH	LY SUMMARY (SEP)								
MIN	993271.	583796.	0.	0.						
MX	1207949.	583796.	٥.	0.						
SM	276855072.	147116464.	0.	0.						
AV	1098631.	583796.	0.	0.						
MONTH	LY SUMMARY (OCT									
MN	975607.	583796.	0. 12991.	0.						
MX		583796.	12991.	324996.						
SM	255514720.	140110912.		4736180.						
AV			1005.	19734.						
MONTH	LY SUMMARY (NOV									
MIN	963000.	583796.		9936.						
MIX		583796.		558733.						
SM	250589440.	140110912.		30270674.						
AV	1044123.	583795.	5206.	126128.						
MONTH	LY SUMMARY (DEC	:)								
MN	945033.	583796.	515.	9936.						
MX	1107379.	583796. 147116464.	12991.	717930.		•				
SM	257862176.	147116464.	2506830.	71439856.						
AV	1023263.	583796.	9948.	283492.						
YEARI	Y SUMMARY									
MIN		583796.	0.	0.						
MX	1304448.	583796.	12991.	759552.						
SM	3251125248.	1765397376.	11331503.	312093952.						
AV	1075108.	583795.	3747.	103206.						

ENTECH ENGINEERING EZDOR - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 11: 9:52 SDL RUN 1 19603 READING. PA 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOCA3 - DX COOL W/HW & PER HW -.1ETUH - HOURLY-REPORT RS 1 PAGR 1- 1 HHOOMM 1SDXHT 1SDX 2SDX 3SDX 4SDX 1SHWONLY 04SHWRLR OSDXHT OSDXNOHT TOT FAN TOT FAN TOT FAN TOT PAN TOT FAN TOT FAN TOT FAN TOT PAN TOT PAN BLECTRIC RLECTRIC BLECTRIC RLECTRIC BLECTRIC BLECTRIC BLBCTRIC BLECTRIC BLECTRIC KW KW KW ΧW KW KW KW EXISTING OFF-PEAK ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) ---- (33) MONTHLY SUMMARY (JAN) 1.474 MN 20.202 10,288 21.658 14.775 54.090 0.001 0.004 2.200 MX 20 202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 5061.797 10655.630 7269.405 26612.115 SM 9939.382 0.384 725.307 1.919 1082.203 14.775 0.001 AV 20.202 10.288 21.658 54.090 0.004 1.474 2.200 MONTHLY SUMMARY (FEB) 10,288 21.658 14.775 0.001 20.202 54.090 0.004 MN 1.474 2 200 MX. 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2,200 SM 8969.687 4567.963 9616.056 6560.194 24015.811 0.346 1.732 654.545 976.622 ΔV 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 MONTHLY SUMMARY (MAR) MN 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 MY 20 202 10.288 21.658 14.775 6914.800 54.090 0.001 0.004 1.474 2.200 SM 9454.534 4814.880 10135.844 25313.963 0.365 689.926 1.825 1029 413 A۷ 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2,200 MONTHLY SUMMARY (APR) 10.288 MN 20.202 21.658 14.775 54.090 0.001 0.004 1.474 2.200 ΜX 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 SM 9454.534 4814.880 10135.844 6914.800 25313.963 0.365 1.825 689.926 1029.413 ΔV 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2,200 MONTHLY SUMMARY (MAY) MN 20,202 10 288 21 658 14 775 54 090 0.000 0.000 1.474 2.200 10.288 MX 20.202 21.658 14.775 54.090 0.001 0.004 1.474 2.200 5061.797 10655.630 26612.115 7269.404 0.936 725.307 1082.203 ΑV 20.202 10.288 21.658 14.775 54.090 0.000 0.002 MONTHLY SUMMARY (JUN) 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 MX 20.202 10.288 21.658 14.775 54 090 0.000 0.000 1.474 2.200 9875.950 6737.497 24664.885 0.000 9212.109 4691.421 0.000 672,235 SM 1003.018 0.000 0.000 1.474 2.200 MONTHLY SUMMARY (JUL) 20.202 10.288 14.775 0.000 0.000 1.474 2,200 MX 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 27261.189 5185.255 10915.524 7446.708 SM 10181.806 0.000 0.000 742 997 1108 599 AV 20.202 10.288 21.658 14.775 0.000 0.000 1.474 2,200

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 11: 9:52 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

RS_1 = HOURLY-REPORT

PAGE 2- 1

RS_1	= 1	HOURLY-REPOR	T							PAGE 2- 1
	1SDXHT	1SDX	2SDX	3SDX	4SDX	1SHWONLY	04SHWBLE V	OSDXHT	OSDXNOHT	
	TOT PAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	
	BLECTRIC	ELECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	
	KW	KW	KW	KW	KW	KW	KW	KW	KW	
	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	
MONTHLY	SUMMARY (A	OG)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	9454.534	4814.880	10135.844	6914.799	25313.963	0.000	0.000	689.926	1029.413	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MONTHLY	SUMMARY (S	BP)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	9454.534	4814.880	10135.844	6914.800	25313.961	0.000	0.000	689.926	1029.413	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MONTHLY	SUMMARY (O	CT)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	10181.806	5185.255	10915.524	7446.708	27261.191	0.197	0.983	742.997	1108.598	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	
MONTHLY	SUMMARY (N	ov)	•							
MIN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9696.958	4938.338	10395.737	7092.102	25963.037	0.374	1.872	707.616	1055.808	
VA	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHLY	SUMMARY (D	EC)								
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9939.382	5061.797	10655.631	7269.405	26612.113	0.384	1.919	725.307	1082.203	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1,474	2.200	
YEARLY	SUMMARY									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2,200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
	115878.648		124229.055		310258.313	2.602	13.010	8456.014	12616.906	
ΑV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	

ENTECH ENGINEERING EZDOE ~ ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

HERM-REC-CHLR

3.892 1 1

	Whenen	**************************************				***************************************
EQUIPMENT	NUMBER SIZE INSTD	NUMBER SIZE INSTD	NUMBER SIZE INSTD	NUMBER SIZE INSTD	NUMBER SIZE INSTD	NUMBER SIZE INSTO
_ •	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL
STM-BOILER	0.591 1 1					
DHW-HEATER	0.000 1 1					

ENTECH ENGINEERING DING. PA 19603 READING, PA 19603 REPORT- PS-D PLANT LOADS SATISFIED

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11: 9:52 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

11: 9:52 PDL RUN 1

WEATHER FILE- NEWARK, NJ

MBTU SUPPLIED PCT OF TOTAL LOAD HRATING LOADS -----869.3 100.0 STM-BOILER 0.0 DHW-HRATER ***** -----100.0 LOAD SATISFIED 869.3 869.3 TOTAL LOAD ON PLANT PCT OF TOTAL LOAD MBTU SUPPLIED COOLING LOADS -----HERM-REC-CHLR 16276.7 100.0 **** -----LOAD SATISFIED 16276.7 100.0 TOTAL LOAD ON PLANT 16276.7 PCT OF TOTAL LOAD MBTU SUPPLIED ELECTRICAL LOADS -----26099.9 100.0 BLECTRICITY **男子里里这样是我男子男子里这样说** ********* LOAD SATISFIED 26099.9 100.0 TOTAL LOAD ON PLANT 26099.9

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (METU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HRATING LOADS	869.3	869.3	0.000		
COOLING LOADS	16276.7	16276.7	0.000	0.000 0.018	0 2
BLECTRICAL LOADS	26099.9	26099.9	0.000	0.000	õ

ENTECH ENGINEERING BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 11: 9:52 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE METU -	BLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	43.20	1289.53	0.00
SPACE COOL	7908.29	0.00	0.00
HVAC AUX	4941.25	0.00	0.00
DOM HOT WIR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	4983.87	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	8224.01	0.00	0.00
TOTAL	26100.61	1289.53	0.00

213.2 KBTU/SQFT-YR GROSS-AREA 213.2 KBTU/SQFT-YR NET-AREA 620.1 KBTU/SQFT-YR GROSS-AREA 620.1 KBTU/SQFT-YR NET-AREA TOTAL SITE ENERGY 27389.43 MBTU TOTAL SOURCE ENERGY 79667.59 MBTU

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 9.6
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

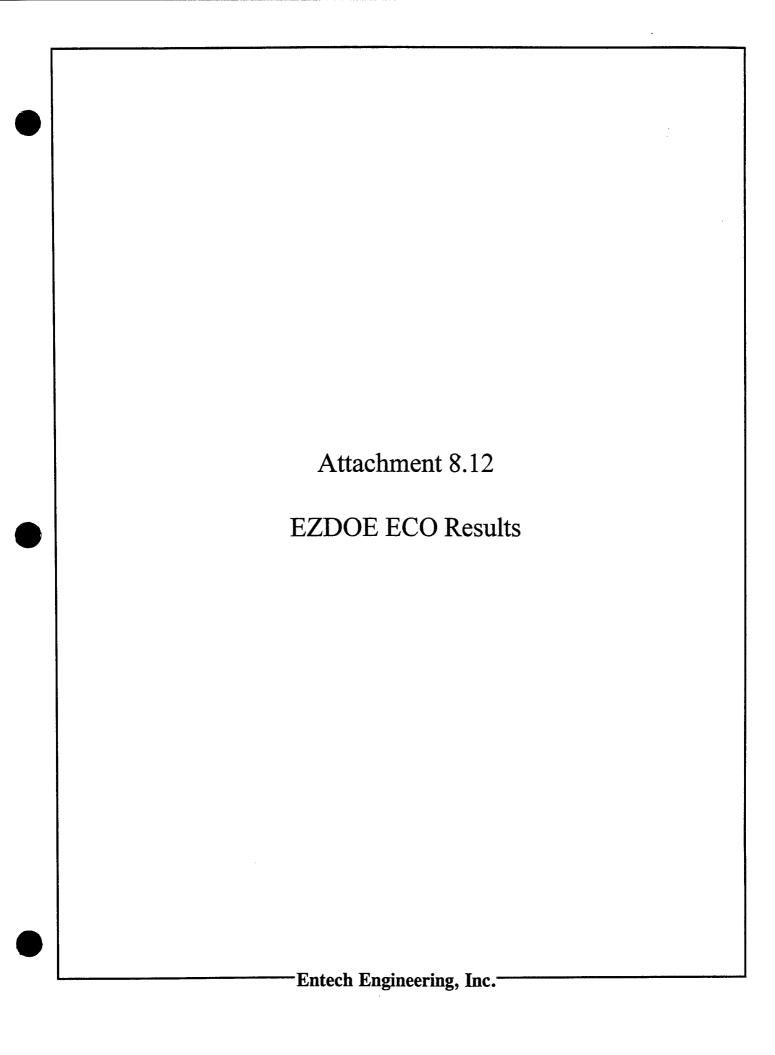
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOCA3 - DX COOL W/HW & PER HW -, 18TUH - HOURLY-REPORT RP_1 PAGR 1- 1 STM-BOIL STM-BOIL MMDDHH HERM-REC HERM-REC -CHLR BR RLECTRIC CONDENSE BLECTRIC PUBL FAN ELEC USB USB USR BTU/HR BTU/HR BTU/HR BTU/HR ----(3) ---- (18) ----(3) ----(4) MONTHLY SUMMARY (JAN) 535361. 401088. 1605. 31005. MX 876201. 583796. 12991. 767666. 206822576. SM 358254432. 263037744. 6162833. A۷ 728159. 534630. 12526. 420371. MONTHLY SUMMARY (FEB) MN 527142. 394952. 1885. 36397. MX 875766. 583796. 12991. 764186. 327136096. 239127616. 5541246. ΑV 736793. 538576. 12480. 442829. MONTHLY SUMMARY (MAR) 631776. 473001. 731. 14115. 12991. 5632770. ΜX 900159. 583796. 709479. 162967184. SM 367624640. 266104240. AV 12036. 785523. 568599. 348220. MONTHLY SUMMARY (APR) 495478. 9936. MN 661938. 515. MX 923082. 583796. 12991. 626246. SM 382968384. 271392160. 2730110. 67362896. ΑV 579898. 5834. 143938. 818309. MONTHLY SUMMARY (MAY) 556541. MN 743947. ο. ο. 975469. 12991. 356551. MX 583796. 287143520. 561445. 11608750. ΑV 840998. 583625. 1141. 23595. MONTHLY SUMMARY (JUN) 798306. 583796. ٥. ٥. MX 0. 1003135. 583796. ٥. SM 396264192. 266210880. 0. ٥. AV 869000. 583796. ٥. MONTHLY SUMMARY (JUL) 804028. 583796. ο. ٥. MX 992180. 583796. ο. 0. SM 441250368. 294233088. 0. ο. AV 583796.

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOB-2.1D 7/ 2/1996 11: 9:52 PDL RUN 1

ENTECH ENGINEERING

REA RP_1	ENTECH ENGINE DING, PA = HOUR	BERING 19603 RLY-REPORT		TE SOFTWARE DEV MONMOUTH - MYE	DOB-2.11 FTMOCA3 - DX	ER HW1BTU	
	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL			
	-CHLR	-CHLR	BR.	ER			
	RLECTRIC	CONDENSR	BLECTRIC	FUEL			
	USE	FAN ELEC	USE	USE			
	BTU/HR	BTU/HR	BTU/HR	BTU/HR			
	(3)	(18)	(3)	(4)			
MONTHLY	SUMMARY (AUG)						
MIN	788823.	583796.	0.	0.			
MX	991107.	583796.	٥.	0.			
SM	405776256.	273216416.	0.	0.			
AV	867043.	583796.	0.	0.			
MONTHLY	SUMMARY (SEP)						
MN	781980.	583796.	0.	0.			
MX	948940.		0.	0.			
SM	397793312.		٥.	0.			
AV	849986.		0.	0.			
MONTHL	SUMMARY (OCT)						
MN	683149.	511279.	0.	0.			
MX	907671.		12991.	469762.			
SM	415276384.	293634560.	910581.				
AV	823961.	582608.	1807.	38968.			
MONTHL	Y SUMMARY (NOV)						
MN	626375.	468976. 583796.	515.	9936.			
MX	922674.	583796.	12991.	647688.			
SM	380792512.	274897728.	4323636.	109662880.			
AV	793318.	572704.	9008.	228464.			
MONTHL	Y SUMMARY (DEC)						
MN	546128.	409124.	515. 12991.	9936.			
MX	885942.	583796.		721583.	•		
SM	370277664.	270221984.		202766960.			
AV	752597.	549232.	12198.	412128.			
YEARLY	SUMMARY						
MN	527142.	394952.	٥.	0.			
MX	1003135.	583796.	12991.	767666.			
SM	4657185792.			977447296.			
AV	811922.	570509.	5555.	170406.			



ECO-7

	ENTECH ENGINE DING, PA	19603		ITE SOFTWARE DI . MONMOUTH - MY	BLOPMENT INC DOB-2.1D 6/26/1996 14: R CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA S	
RS_1	HOU!	RLY-REPORT				PAGE 1- 1
MMDDHH	1SMCAHUS ZR	2SPERFC	3SPERPC	4SPERFC		
	SUPPLY	SUPPLY	SUPPLY	SUPPLY		
	BLECTRIC	BLECTRIC	RFRCLLIC	BLECTRIC		
	KW	KW	KW	KW	$\Lambda \Lambda C \Lambda \leq$	MANGE
					1 1 CAF J	CANADA
	 (49)	(49)	(49)	(49)	• •	
MONTHI, V	SUMMARY (JAN)				5-70-0	ummer L @ 80°
MN	0.000	1.523	1.523	1.786	F1 6740	
MX	30.066	1.523	1.523	1.786		
SM	1262.789	749.415	749.415	878.909		
AV	2.567	1.523	1.523	1.786		
	Y SUMMARY (FEB)				~ ^ ^ ^	SK DSHOE
WM	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		シャンシャクに
SM	1142.523	676.301	676.301	793.162	0) \ \	,,
AV	2.573	1.523	1.523	1.786		
MONTHLY	Y SUMMARY (MAR)					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM	1383.055	712.858	712.858	836.035		
AV	2.955	1.523	1.523	1.786		
MONTHEE	Y SUMMARY (APR)					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM	3758.301	712.858	712.858	836.035		
AV	8.031	1.523	1.523	1.786		
MONTEUT	Y SUMMARY (MAY)					
MN	0.000	1.523	1.523	1.786	•	
MX	30.066	1.523	1.523	1.786	•	
SM	5923.082	749.415	749.415	878.909		
AV	12.039	1.523	1.523	1.786		
	Y SUMMARY (JUN)					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM AV	4239.363 9.297	694.579 1.523	694.579 1.523	814.599 1.786		
~*	J. 2 37	2.545		230		
	Y SUMMARY (JUL)		1 500	1 700		
MN	0.000	1.523	1.523	1.786 1.786		
MX	30.066 4960.957	1.523 767.693	1.523 767.693	900.346		
SM				1.786		
ΑV	9.843	1.523	1.523	1.786		

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7 SDL RUN 1
4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
PAGE 2- 1 ENTECH ENGINEERING
READING, PA 19603
RS_1 = HOURLY-REPORT

S_1	= HOUS	LLY-REPORT			PAGE 2-	
	1SMCAHUS ZR	2SPERFC	3SPERFC	4SPERFC		
	SUPPLY	SUPPLY	SUPPLY	SUPPLY		
	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC		
	KW	KW	KM	KW		
	(49)	(49)	(49)	(49)		
MONTHLY	SUMMARY (AUG)					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM	3728.234	712.858	712.858	836.035		
AV	7.966	1.523	1.523	1.786		
MONTHLY	SUMMARY (SEP)					
MN	0.000	1.523	1.523	1.786		
MIX	30.066	1.523	1.523	1.786		
SM	3427.570	712.858	712.858	836.035		
AV	7.324	1.523	1.523	1.786		
MONTHLY	SUMMARY (OCT)					
MN	0.000	1.523	1.523	1.786		
MOX	30.066	1.523	1.523	1.786		
SM	3066.773	767.693	767.693	900.346		
AV	6.085	1.523	1.523	1.786		
MONTHLY	SUMMARY (NOV)					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM	1773.918	731.136	731.136	857.472		
AV	3.696	1.523	1.523	1.786		
MONTHLY	SUMMARY (DEC)					
MN	0.000	1.523	1.523	1.786	•	
MX	30.066	1.523	1.523	1.786		
SM	1292.855	749.415	749.415	878.909		
AV	2.628	1.523	1.523	1.786		
YEARLY	SUMMARY					
MN	0.000	1.523	1.523	1.786		
MX	30.066	1.523	1.523	1.786		
SM	35959.418	8737.077	8737.077	10246.794		
AV	6.269	1.523	1.523	1.786		

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 SDL RUN 1 ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 READING, PA = HOURLY-REPORT PAGE 1- 1 RS_2 OSMCAHUS MMDDHH SSZF2MID SSFZ3MID SSZF4MID ZR SUPPLY SUPPLY SUPPLY SUPPLY BLECTRIC BLECTRIC BLECTRIC BLECTRIC KW KW KW KW ---- (49) ---- (49) ---- (49) ---- (49) MONTHLY SUMMARY (JAN) 0.000 0.000 0.000 0.000 23.912 29.253 29.469 17.562 ΜX 3539.614 4420.291 737.587 2702.056 SM 5.492 7.194 8.984 1.499 AV MONTHLY SUMMARY (FEB) 0.000 23.912 0.000 0.000 0.000 MN 29.253 29.469 17.562 MX 2343.376 3071.565 3123.672 667.341 7.035 1.503 ΑV 5.278 6.918 MONTHLY SUMMARY (MAR) 0.000 0.000 0.000 0.000 29.469 17.562 23 912 29.253 MX 3539.613 2445.894 807.833 2725.968 SM ΑV 7.563 5.226 1.726 MONTHLY SUMMARY (APR) 0.000 0.000 0.000 0.000 MN 29.469 4037.198 ΜX 23.912 29.253 17.562 2247.885 SM 4423.720 5558.070 4.803 11.876 ΑV 9.452 MONTHLY SUMMARY (MAY) 0.000 0.000 0.000 23.912 MN 29.253 29.469 17.562 MX 7131.401 5547.584 6815.949 3652.813 13.854 14.495 7,424 ΑV 11.276 MONTHLY SUMMARY (JUN) 0.000 0.000 0.000 MN 0.000 29.253 29.469 17.562 MX 23.912 4153.927 7042.997 3266.458 3371.592 9.109 ΑV 7.394 15.445 7.163 MONTHLY SUMMARY (JUL) 0.000 23.912 MN 0.000 0.000 0.000 17.562 29.469 29.253 MX 5177.781 8015.459 4302.592 4232.424 10.273 15.904 8.537

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ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 SDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 PA 19603 READING, RS_2 - HOURLY-REPORT SSFZ3MID SSZF4MID OSMCAHUS SSZF2MID ZR SUPPLY SUPPLY SUPPLY SUPPLY BLECTRIC BLECTRIC BLECTRIC BLECTRIC KW KW KW XW --- (49) ---- (49) ---- (49) --- (49) MONTHLY SUMMARY (AUG) 0.000 0.000 0.000 23.912 0.000 MN 29.253 29.469 17.562 MX 3610.712 4417.204 7101.933 3810.868 SM 7.715 9.438 15.175 8.143 AV MONTHLY SUMMARY (SEP) 0.000 0.000 0.000 0.000 23.912 MN 29.253 29.469 17.562 ΜX 3419.416 4212.433 6512.560 2950.349 ΑV 7.306 9.001 13.916 6.304 MONTHLY SUMMARY (OCT) 0.000 0.000 0.000 0.000 MN 29.469 23.912 29.253 17.562 3889.856 2897.664 SM 4495.456 5558.070 7.718 5.749 11.028 ΑV 8.920 MONTHLY SUMMARY (NOV) 0.000 23.912 0.000 0.000 0.000 MN 29.469 17.562 29.253 MX SM 3610.712 4592.721 2652.175 1229.312 9.568 5.525 2.561 MONTHLY SUMMARY (DEC) 0.000 0.000 0.000 MN 0.000 29.469 3477.295 ΜX 23.912 29.253 17.562 913.203 SM 2654.232 3481.108 7.075 ΑV 5.395 YEARLY SUMMARY 0.000 0.000 MN 0.000 0.000 23.912 29.253 29.469 MX 43137.242 54118.059 59850.734 27483.906 SM

ΑV

7.520

9.435

10.434

4.791

	BNTECH	ENGINEER	RING	BZDO
RI	ENTECH SADING,	PA	19603	4130
ro_3		- HOURE	- REAL OILE	
MMDDHH	1EXTPER	1EXTPER	1INTPER	1INTPER
	THERMOST	ZONE	THERMOST SETPOINT	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	F	P	P	F
	(7)	(6)	(7)	(6)
MONTH	LY SUMMAR	Y (JAN)		
MN	-999.0 75.0	69.8	-999.0	69.9
MX	75.0	77.6	75.0	77.7
SM	******	36855.7	******	36702.7
AV	-907.5	74.9	-907.5	74.6
MONTH	LY SUMMAR	Y (FEB)		
MN	-999.0 75.0 *******	72.6	-999.0	70.7
MX	75.0	78.5	75.0	77.6
SM	******	33718.5	******	33416.2
AV	-907.2	75.9	-907.2	75.3
MONTH	LY SUMMAR	Y (MAR)		
MIN	-999.0	74.1	-999.0	73.9
MX	LY SUMMAR -999.0 75.0	80.1	75.0	79.9
SM	******	35946.3	******	35817.9
AV	-893.4	76.8	-893.4	76.5
MONTE	ILY SUMMAR	Y (APR)		
MIN	-999.0	74.4	-999.0	74.2 84.4 36921.3
MD	80.0	84.7	80.0	84.4
SI	******	36979.7	******	36921.3
/A	7 -711.3	79.0	-711.3	78.9
MONTE	ILY SUMMAR	Y (MAY)		
M	1 -999.0	74.7	-999.0	75.1
MD	80.0	96.1	80.0	96.0
St	4 *******	39403.2	******	39635.2
A	/ -567.4	80.1	-567.4	75.1 96.0 39635.2 80.6
MONT	ILY SUMMAI	(NUL) YS		
M	7 -999.0	74.9	999.0	75.5 83.0
M	K 80.0	82.5	80.0	83.0
SI	M ******	36183.0	******	36470.4
	V -665.8	3 79.3	-665.8	80.0
MONT	HLY SUMMAI	RY (JUL)		
M	N -999.	75.	L -999.0	75.9
M	X 80.0	82.1	7 80.0	75.9 83.0 40483.0
S	M ******	40218.	*******	40483.0
A'	V -646.	z 79.1	8 -646.2	80.3

	MDING,	= HOURL	TOOGS	
RS_3		= HOURL	-KEPORI	
	1EXTPER	1EXTPER	1INTPER	1INTPER
	THERMOST	ZONE	THERMOST	ZONE
	P SELECTIVE	P P	SETPOINT F	P
	F	F	F	•
	(7)	(6)	(7)	(6)
MONTH	LY SUMMAR	Y (AUG)		
MN	-999.0	74.9	-999.0	75.5
MX	80.0	82.6	80.0	82.4
SM	******	37206.3	******	82.4 37386.3
AV	-713.6	79.5	-713.6	79.9
MONTH	LY SUMMAR	Y (SEP)		
		74.8	-999.0	74.9
MX			80.0	
SM	******	37055.3	******	37081.8
AV	-736.6	79.2	-736.6	79.2
MONTH	LY SUMMAR	Y (OCT)		
MN	-999.0	74.5	-999.0	74.1 82.3
MX	80.0	83.9	80.0	82.3
SM	******	39951.6	******	39707.9
AV	-781.0	79.3	-781.7	78.8
MONTH	LY SUMMAR	Y (NOV)		
MIN	-999.0	74.1	-999.0	74.0 83.6
MX	80.0	83.0	80.0	83.6
SM	******	37224.9	******	37056.3
AV	-866.8	77.6	-866.8	77.2
MONTE	LY SUMMAR	Y (DEC)		
MIN	-999.0	72.7	-999.0	71.6
MIX	80.0	81.0	75.0	71.6 79.5
SM	******	37427.9	******	37338.4
AV	-905.2	76.1	-905.2	75.9

ARIY SUMMARY
MN -999.0 69.8 -999.0 69.9
MX 80.0 96.1 80.0 96.0
SM ******** 448170.7 ******** 448017.5
AV -774.5 78.1 -774.6 78.1

YEARLY SUMMARY

D1	NIACA SMICAS		19603	4130
RS_4	EADING,		Y-REPORT	
	2EXTPER			
	THERMOST	ZONB TEMP F	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	F	F	F	P
	(7)	(6)	(7)	(6)
MONTH	LY SUMMAR!	Y (JAN)		
MN	72.0	72.2	72.0	72.2
MX	72.0 75.0 35445.0	75.5	75.0	75.6
SM	35445.0	35818.2	35472.0	35835.6
AV	72.0	72.8	72.1	72.8
MONTH	LY SUMMAR	Y (FEB)		
MN	72.0 75.0 32001.0	72.2	72.0	72.2
MX	75.0	75.1	75.0	76.0
SM	32001.0	32337.8	32046.0	32376.2
AV	72.1	72.8	72.2	72.9
MONTH	LY SUMMAR	Y (MAR)		
MN	72.0 75.0 33906.0	72.5	72.0	72.5
MX	75.0	79.9	75.0	80.8
SM	33906.0	34308.4	33942.0	34389.8
AV	72.4	73.3	72.5	73.5
MONTH	LY SUMMAR	Y (APR)		
MIN	72.0 75.0 34662.0	72.7	72.0	72.7
MX	75.0	96.9	75.0	98.5
SM	34662.0	37561.9	34665.0	37913.2
AV	74.1	80.3	74.1	81.0
MONTH	LY SUMMAR	Y (MAY)		
MN	72.0 75.0 36561.0	67.8	72.0	67.9
MX	75.0	102.3	75.0	103.7
ŞM	36561.0	39161.8	36573.0	39429.4
AV	74.3	79.6	74.3	80.1
MONTH	LY SUMMAR	Y (JUN)		
MN	72.0	73.5	72.0	73.5
MX	75.0	75.0	75.0	73.5 75.1 33916.4
SM	34161.0	33906.2	34167.0	33916.4
AV	74.9	74.4	74.9	74.4
MONTH	LY SUMMAR	A (lor)		
MN	72.0	73.8	72.0	73.9
MX	72.0 75.0 37794.0	75.0	75.0	75.0
SM	37794.0	37510.9	37794.0	37520.6
ΑV	75.0	74.4	75.0	74.4

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_4 = HOURLY-REPORT PAGE 2- 1

RE	ADING,	PA	19603	4130
RS_4			-REPORT	
	2EXTPER			סקומייות כ
	ZBAIPBR	4DAIPBR	ZINIFBR	ZIMIFAK
	THERMOST	ZONE	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P		F	
	(7)	(6)	(7)	(6)
MONTH	Y SUMMARY	(AUG)		
MN	72 0	72.8	72.0	72.8
W	75.0	74.9	72.0 75.0	75.0
SM	35019.0	34776.7	35034.0	34791.4
AV	74.8	74.3	74.9	74.3
•••				
MONTHI	Y SUMMARY 72.0 75.0	(SEP)		
MIN	72.0	71.6	72.0	72.0
MX	75.0	74.6	75.0	74.7
SM	34944.0	34693.5	34968.0	34718.0
AV	74.7	74.1	74.7	74.2
MONTHI	Y SUMMARY	(OCT)		
MN	72.0 75.0 37191.0	67.5	72.0	68.5
MX	75.0	89.9	75.0	92.3
SM	37191.0	38152.6	37338.0	38527.4
AV	73.8	75.7	74.1	76.4
MANAGERIA	V CIMMADI	Z (MOM)		
MA	LY SUMMARY 72.0 75.0	77 6	72 0	72.6
MY	72.0 75.0	90.0	75.0	90.7
CM	35124.0	36197 6	35172 0	36425 4
AV.			73.3	75.9
A	73.2	,,,,	,5,5	
MONTH	LY SUMMAR	Y (DEC)		
MIN	72.0	72.5	72.0	72.5
MX	75.0 35547.0	79.3	75.0	80.5
SM	35547.0	35932.1	35568.0	35995.9
AV	72.3	73.0	72.3	73.2
YEARL	Y SUMMARY			
			72.0	67.9
MX	72.0 75.0	102.3	75.0	103.7
	422355.0			
AV				

MMDDHH	3EXTPER	3EXTPER	3 INTPER	3INTPER
	THERMOST		THERMOST SETPOINT	

/	71	1	٤١	 71	(61

•	(7)	(6)	(7)	(6)
MONTHL	SUMMARY	(JAN)		
MN	72.0	72.2	72.0	72.2
MX	75.0	75.5	72.0 75.0	75.6
SM	35445.0	35818.2	35472.0	35835.6
AV	72.0			
MONTHL	Y SUMMARY	(FEB)	72.0 75.0	
WIM	72.0	72.2	72.0	72.2
MX	75.0	75.1	75.0	76.0
			32046.0	
AV	72.1	72.8	72.2	72.9
MONTHL	Y SUMMARY	(MAR)		
MN	72.0	72.5	72.0 75.0 33942.0	72.5
MX	75.0	79.9	75.0	80.8
SM	33906.0	34308.3	33942.0	34389.8
AV	72.4	73.3	72.5	73.5
MONTHL	Y SUMMARY	(APR)		
MN	72.0	72.7	72.0	72.7
MX	75.0	96.9	75.0	98.5
SM	34662.0	37561.8	34665.0	37913.2
AV	74.1	80.3	34665.0 74.1	81.0
MONTHI	V GEMMIS V	(MAY)		67.9 103.7 39429.4 80.1
MN	72.0	67.8	72.0	67.9
MX	75.0	102.3	75.0	103.7
SM	36561.0	39161.9	36573.0	39429.4
ΑV	74.3	79.6	74.3	80.1
MONTHIT	v cmmany	((((((((((((((((((((
MONTHL	ואתייייטב זו	73 5	72 0	73.5
MIN	72.0	73.3	75.0	73.5 75.1
AM MA	75.0	22006.2	34167.0	33916.4
AV.	74.9	74.4	74.9	74.4
MONTHI	Y SUMMARY	(JUL)		73.9 75.0
MN	72.0	73.8	72.0	73.9
MX	75.0	75.0	75.0	75.0
SM	37794.0	37510.9	37794.0	37520.6
VA	75.0	74.4	75.0	74.4

H ENGINEBRING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7
PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING DOE-2.1D 6/26/1996 14:53: 7 SDL RUN 1 READING, = HOURLY-REPORT RS_5 _____ 3EXTPER 3EXTPER 3INTPER 3INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP F P ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (AUG) 72.0 72.8 74.9 72.0 72.8 MN 75.0 75.0 MX 75.0 SM 35019.0 34776.7 35034.0 34791.4 ΑV 74.8 MONTHLY SUMMARY (SEP) 72.0 71.6 74.6 72.0 72.0 MN 75.0 MX 75.0 SM 34944.0 34693.5 34968.0 34718.0 A۷ 74.7 74.1 74.7 74.2 MONTHLY SUMMARY (OCT) 72.0 72.0 68.5 75.0 89.9 75.0 92.3 SM 37191.0 38152.5 37338.0 38527.4 74.1 75.7 ΑV 73.8

MONTHLY SUMMARY (NOV)

MONTHLY SUMMARY (DEC)

72.0 75.0

72.3

75.0

73.6

75.0

72.0 72.6

90.0

72.5

79.3

67.5

SM 422355.0 430347.1 422739.0 431839.3

102.3

75.0

SM 35547.0 35932.0 35568.0 35995.9 73.0

SM 35124.0 36187.2 35172.0 36425.4

72.0

75.0

75.0

72.3

72.0

75.0

73.7

72.6

90.7

80.5

103.7

75.3

MN

MX

ΑV

MX

ΑV

YEARLY SUMMARY MN 72.0 PAGE 2- 1

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

= HOURLY-REPORT DOR-2.1D 6/26/1996 14:53: 7 SDL RUN 1 RS_6 MMDDHH 4EXTPER 4EXTPER 4INTPER 4INTPER THERMOST ZONE SETPOINT TEMP F F THERMOST ZONE SETPOINT TEMP F ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 72.1 72.9 72.2 72.0 72.0 72.0 72.0 MX 73.0 35424.0 35761.0 35424.0 35763.6 ΑV 72.0 72.7 72.0 72.7 MONTHLY SUMMARY (FEB) 72.0 72.2 72.0 72.2 MN 72.0 73.5 72.0 ΜX 31968.0 32276.7 31968.0 32282.9 72.0 72.7 AV 72.0 72.7 MONTHLY SUMMARY (MAR) 72.5 72.0 72.0 72.5 ΜX 75.0 76.8 75.0 77.3 SM 33738.0 34102.0 33753.0 34123.1 72.1 72.9 AV 72.1 72.9 MONTHLY SUMMARY (APR) 72.6 MIN 72.0 MX 75.0 72.0 72.6 90.4 75.0 91.4 SM 34434.0 35745.0 34461.0 35950.4 ΑV MONTHLY SUMMARY (MAY) 64.0 72.0 MN 72.0 75.0 98.4 75.0 99.5 SM 36351.0 37680.9 36384.0 37852.7 74.0 76.6 76.9 ΑV 73.9 MONTHLY SUMMARY (JUN) MIN 72.0 MIX 75.0 72.3 75.0 72.0 72.3 75.0 75.1

SM 34017.0 33852.2 34050.0 33866.7

MX 75.0 75.0 75.0 75.1 SM 37767.0 37490.9 37770.0 37501.8 74.4

74.2

73.1 75.0

ΑV

MN

74.6

MONTHLY SUMMARY (JUL)

72.0

74.7

72.0

74.9

74.3

73.2

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ING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7
19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1 DOE-2.1D 6/26/1996 14:53: 7 SDL RUN 1 ENTECH ENGINEERING READING, PA 19603 = HOURLY-REPORT RS_6 -----4EXTPER 4EXTPER 4INTPER 4INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (AUG) 72.0 71.2 72.0 71.4 MN 75.0 74.9 75.0 75.0 SM 34881.0 34701.0 34905.0 34721.1 74.6 74.2 AV 74.5 74.1 MONTHLY SUMMARY (SEP) MN 72.0 69.5 72.0 69.9 MX 75.0 74.7 75.0 74.8 SM 34650.0 34547.6 34698.0 34589.0 74.0 73.8 ΑV MONTHLY SUMMARY (OCT) 63.5 MN 72.0 62.5 MX 75.0 82.6 72.0 75.0 83.8 SM 36774.0 36757.6 36882.0 37036.8 72.9 73.2 MONTHLY SUMMARY (NOV) 72.6 72.0 72.0 MN 75.0 84.9 75.0 85.3 SM 34740.0 35345.7 34764.0 35386.3 72.4 73.6 AV 72.4

MONTHLY SUMMARY (DEC)

72.0

75.0

73.3

MN

MX SM 35448.0

AV

ΑV

YEARLY SUMMARY MN 72.0 MX 75.0 72.5 76.0

72.7

62.5

MN 72.0 62.5 72.0 63.5 MX 75.0 98.4 75.0 99.5 SM 420192.0 424051.1 420519.0 424877.6 73.9

72.0

35790.5 35460.0 35803.4

72.1

72.0

73.3

75.0

72.5

76.7

63.5

72.8

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SM ******* 35156.7 ******* 35181.8

MN -999.0 74.9 -999.0 75.0 MX 80.0 81.6 80.0 81.6 SM ******** 37064.1 ******** 37082.3 79.2 -720.5

MN -999.0 75.1 -999.0 75.1 MX 80.0 85.7 80.0 85.7 SM ******** 37451.0 ******** 37460.7

MX 80.0 97.1 80.0 97.1 SM ******* 39786.8 ******* 39796.0

MN -999.0 75.1 -999.0 MX 80.0 97.1 80.0

MN -999.0 75.3 -999.0 MX 80.0 82.0 80.0 82.0 SM ******* 36459.3 ******* 36458.3

80.0 -561.4

80.9 -488.4

80.0 -663.5

MN -999.0 75.4 -999.0 75.4 MX 80.0 82.2 80.0 82.1 SM ******** 40401.7 ******* 40399.1 AV -620.5 80.2 -620.5 80.2

79.2 -744.4

79.2

80.0

75.2

AV -761.5

AV -736.7 MONTHLY SUMMARY (APR)

AV -572.9

MONTHLY SUMMARY (MAY)

-490.6

MONTHLY SUMMARY (JUN)

-665.8

MONTHLY SUMMARY (JUL)

MONTHLY SUMMARY (MAR)

	RMTRCH	RNGINER	RING		RZDOR -	RLIT	E SOFTWAR	E DEVEL	OPMENT	INC	DOE	-2.1D	6/26	1996	14	:53: '	7 SDL	RU	N
	READING.	PA	19603		4130.05	FT.	HTUOMNOM	- MYER	CENTER,	ŊJ	DOE FTMOACO -	SIM MC	A H20	ONLY	W/OA	SCHD1			
RS_7	ALL DING,		Y-REPORT														PAGE		
	2MIDL	2MIDL	3MIDL	3MIDL															
	THERMOST	ZONE	THERMOST	ZONE															
	SETPOINT																		
	F	F	F	F															
	(7)	(6)	(7)	(6)														
MONT	THLY SUMMARY	Y (AUG)																	
N	AN -999.0	75.3	-999.0	75	. 3														
	1X 80.0			82															
	M ******		******	37419	.0														
7	V -651.4	79.9	-651.4	80	.0														
MONT	THLY SUMMARY	Y (SEP)																	
	n -999.0		-999.0	75	. 2														
	VIX 80.0		80.0	81	9														
-	SM ******				.1														
			-667.4		.8														
MONT	THLY SUMMAR	v (oct)																	
	MN -999.0		-999.0	75	1.1														
_	MIX 80.0				.9														
	SM ******				3.4														
	AV -596.9																		
MON	THLY SUMMAR	Y (NOV)																	
	MN -999.0		-999.0	7.5	5.0														
	MX 80.0				5.1														
	SM ******																		
	AV -660.0		-646.5		.7														
MON	THLY SUMMAR	Y (DEC)																	
1	MN -999.0	74.8	-999.0	74	1.8						•								
	MX 80.0		80.0	81	1.4														
	SM ******				1.3														
	AV -756.0	79.2	2 -738.4	. 79	3.3														
YBA	RLY SUMMARY	•																	
	MIN -999.0		7 -999.0	7-	1.8														
	MEX 80.0	97.1	1 80.0	91	7.1														
	SM ******	457486.1	1 *******	45765	9.3														
	AV -660.1	. 79.8	8 -651.4	. 79	9.8														

75.1

81.0

MONTHLY SUMMARY (JUL)

MDV -999.0 MX 75.0

AV -419.4

MN -999.0 74.4 -999.0 75.1 MX 75.0 79.5 80.0 87.0 SM ******** 40806.6

76.2 -474.9

PAGR 1- 1

		75 PP 177 C***	D10"T10D0	D TNC	2700	P _ Pf.	וסגעריפור פידיו	DEVELOPMENT	TNC	DOR	-2 1D	6/26/199	6 14:5	3 - 7	SDL	RIIN	1
								- MYER CENTER							000		•
		DING,			4130	.05 61	. MONMOUTH	- MIDE CENTER	,	FINOACO	SIM MC	I MEU ONL	I N/OR SC		ACP	2-	•
RS_8	1		= HOURL	Y-REPORT											103 E	-	•
																	-
	41	MIDL	4MIDL		OINTEXTP												
				ER	BR												
		HERMOST		THERMOST													
		BTPOINT		SETPOINT													
	F		P	P	F												
	-	(7)	(6)	(7)	(6)												
MON	THLY	SUMMARY	(AUG)														
		-999.0		-999.0	75.0												
	MX	75.0	79.1														

		-445.9		-499.2													
MOI	erur.v	SUMMARY	(SRP)														
	MN	-999.0	74.0	-999.0	74.8												
	MX	75.0	78.8														

	AV	-491.8		-612.1													
			. (0.771)														
MOI		SUMMAR	71.5	-999.0	74.5												
	MN	-999.0	80.1														
	MX	75.0															
					40213.3												
	AV	-717.8	75.3	-646.2	79.8												
MOI		SUMMAR															
	MN	-999.0															
	MX	75.0															
					37389.3												
	ΑV	-798.0	73.5	-842.1	. 77.9												
MO	NTHLY	SUMMAR	Y (DEC)														
	MN	-999.0								•							
	MX	75.0	76.3	80.0	81.9												
	SM *	******			37041.3												
	AV	-742.1	72.6	-885.6	75.3												
YE	ARLY	SUMMARY															
	MN	-999.0	68.7	7 -999.0	69.6												
	MX	75.0	93.6	\$ 80.0	98.0												
	SM 4	******	427391.5	5 ******	449424.8												
	AV	-619.0	74.5	-705.1	L 78.4												

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAII	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTO (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
HW-BOILER	4.101 1 1					
HERM-CENT-CHLR	7.800 1 1					
COOLING-TWR	2.379 4 4					

ENTEC	H ENGINE	BRING	EZDOE - ELIT	E SOFTWARE	DEVELOPMENT	INC	DOR-2.1D 6/26	/1996	14:53: 7	PDL RUN 1
READING,	PA	19603	4130.05 FT.	MONMOUTH -	MYER CENTER,	NJ	FIMOACO - SIM MCA H20	ONLY	W/OA SCHD1	
REPORT- PS-C	EQUIPMENT	PART LOAD	OPERATION				WEATHER I	ILB- I	NEWARK, NJ	

equipment	0 10	20		HOURS F				_		10 16	00 - 110+	TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	BLBC USED (MBTU)	THERMAL USED (MBTU)
	0 10	20	3		30	0,	J 70	, 0	5	0 10	0 - 110+					
HW-BOILER	2827	616	634	478	311	139	41	28	9	4	1	5088	3096.9	0.0	202.4	4504.8
20022	2827	616	634	478	311	139	41	28	9	4	ī					
HERM-CENT-CHLR	1286	825	408	207	244	352	266	81	3	0	0	3672	8366.2	0.0	1972.7	0.0
HERNI-CHUR -CHUR	1286	825	408	207	244	352	266	81	3	ō	ŏ	3072	0300.2	0.5	13/2.7	0.0
	1660	c=1	227	116	20	27	٠.	100		115		2672	10777 0			
COOLING-TWR	1660	651	227	116	89	77	68	102	125	115	442	3672	10338.9	0.0	807.7	0.0
	1660	651	227	116	29	77	68	102	125	115	447					

HOT LOOP CIRCULATION PUMP ELECTRICAL USE = COLD LOOP CIRCULATION PUMP ELECTRICAL USE = 154.2 MBTU

- NOTES TO TABLE

 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS
 THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
 - 2) THE SECOND PART LOAD ENTRY FOR BACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING 19603 READING, PA 19603 REPORT- PS-D PLANT LOADS SATISFIED

BZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7 4130.05 PT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHOL

DOB-2.1D 6/26/1996 14:53: 7 PDL RUN 1

WEATHER FILE- NEWARK, NJ

HEATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD HW-BOILER 3096.9 100.0 ******* ************ LOAD SATISFIED 3096.9 100.0 TOTAL LOAD ON PLANT 3096.9 COOLING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD HERM-CENT-CHLR 8366.2 100.0 --------LOAD SATISFIED 8366.2 100.0 TOTAL LOAD ON PLANT 8366.2 MBTU SUPPLIED PCT OF TOTAL LOAD ELECTRICAL LOADS RLECTRICITY 21337.4 100.0 ----------------LOAD SATISFIED 21337.4 100.0 TOTAL LOAD ON PLANT 21337.3

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 86.F

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3096.9	3096.9	0.000	0.000	0
COOLING LOADS	8366.2	8366.2	0.000	0.000	0
ELECTRICAL LOADS	21337.3	21337.4	0.000	0.000	0

ENTECH ENGINEERING 19603 READING, PA 19603
REPORT- PS-H EQUIPMENT USE STATISTICS

BZDOB - BLITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 6/26/1996 14:53: 7 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

WEATHER FILE- NEWARK, NJ

AVG BQUIPMENT OPER RATIO (MBTU) ----0.148 4.101 2 20 3 4.101 5088 HW-BOILER HERM-CENT-CHLR 0.292 7.613 6 13 15 7.800 3672 0.296 9.214 6 13 15 2.379 14688 COOLING-TWR

ENERGY TYPE IN SITE METU -	BLECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	202.45	4504.78
SPACE COOL	2780.41	0.00
HVAC AUX	3574.63	. 0.00
DOM HOT WIR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.50	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.37	0.00
TOTAL	21337.36	4504.78

TOTAL SITE ENERGY 25842.22 MBTU 78.4 KBTU/SQFT-YR GROSS-AREA 78.4 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 68581.08 MBTU 208.1 KBTU/SQFT-YR GROSS-AREA 208.1 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 10.1 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING READING, PA 19603

SM

AV

783858752.

1555275.

223227600.

442912.

70.7

54.3

EZDOE - ELITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL

DOR-2.1D 6/26/1996 14:53: 7 PDL RUN 1

- HOURLY-REPORT RP_1 HERM-CEN HERM-CEN HERM-CEN HERM-CEN COOLING-COOLING-COOLING-COOLING-MMDDHH TWR T-CHLR T-CHLS T-CHI.D T-CHI.R TWD TWP שער LEAVING WATER RANGE PAN PUMP RNTERING BLECTRIC T.OAD COLD TEM FLOWRATE BLBC USE COND TEM BTU/HR BTU/HR GAL/MIN R BTU/HR BTU/HR ---- (13) ---- (12) ----(8) ---- (10) ---- (20) ---- (21) ----(3) ----(1) MONTHLY SUMMARY (JAN) ٥. 0.0 0.0 0.0 0.0 0. ٥. 0.0 0.0 0.0 0. 0. ٥. ٥. 0.0 0.0 0.0 0.0 ٥. 0.0 0. SM ٥. ο. 0.0 0.0 0.0 ٥. ٥. ٥. AV ٥. MONTHLY SUMMARY (FEB) 0.0 0.0 0.0 0. Ο. Ο. 0.0 MN ٥. MX ٥. 0.0 0.0 0.0 0.0 ٥. ٥. ٥. ٥. 0.0 0.0 0.0 0.0 ٥. 0. 0.0 0.0 0.0 0.0 ο. ΔV ٥. ٥. MONTHLY SUMMARY (MAR) 0.0 0.0 0.0 0.0 ο. ٥. 0. ٥. 0.0 0.0 0.0 0.0 ٥. ٥. MX 0. 0.0 0.0 0.0 0.0 0. SM Ο. ٥. 0.0 0.0 0.0 0.0 ο. ο. ΑV MONTHLY SUMMARY (APR) 0.0 0.0 0.0 0.0 ٥. 0. 0. MN ٥. 0. 0.0 0.0 0.0 0.0 α. ο. 0.0 0.0 0. 0.0 0.0 SM ٥. 0.0 0.0 0.0 Ο. Ο. Ο. AV MONTHLY SUMMARY (MAY) 0.0 0.0 0.0 0.0 ο. 0 ٥. MN 1950.0 5.5 261.8 90465. 4487600. 838479. 77.3 55.3 140410. 16614.1 13603.2 491400.0 28844272. 22797268. 65228444. SM 169750432. 27.6 998.8 0.5 58627. 46336. 132578. ΑV 345021. MONTHLY SUMMARY (JUN) 53.9 1950.0 0.6 106748. 90465. 149259. 316498. MN 852782. 80.0 55.3 1950.0 5.5 140410. 90465 MX 24709.3 889200.1 817.5 41252200. 31407.7 58399344. 581556736. 179042656. 68.9 54.2 1.8 392637. ΑV 1275344. MONTHLY SUMMARY (JUL) 1950.0 0.6 113014. 90465. 149259. 65.0 53.9 MN 316498. ΜX 4115743. 783141. 79.6 55.2 1950.0 5.1 140410. 90465 27358.6 1074.1 45594536. 35653.1 982800.1 66740936.

ENTECH ENGINEERING EZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 PDL RUN 1 PA 19603 = HOURLY-REPORT READING, 19603 4130.05 PT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1 RP 1 PAGR 2- 1 --------HERM-CEN HERM-CEN HERM-CEN HERM-CEN COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR T-CHI.D T-CHI.R TWR TWR TWR TWR ENTERING LEAVING WATER BLECTRIC PANCE LOAD PAN PUMP COLD TEM USE COND TEM FLOWRATE RLRC RLRC BTU/HR BTU/HR GAL/MIN BTU/HR BTU/HR ----(1) ----(3) ---- (12) ~--- (13) ----(8) ----(10) ----(20) ---- (21) MONTHLY SUMMARY (AUG) 316498. 149259. 64.9 53.9 1950.0 0.6 107897. 90465. ΜX 4499745. 878697. 83.6 55.3 1950.0 5.6 140410. 90465. 25360.1 186173856. 33142.3 912600.1 SM 598733184. 843.4 60455884. 42337780. 397807. 70.8 54.2 1950.0 ΑV 1279344. 1.8 129179. 90465. MONTHLY SUMMARY (SEP) 149259 65.0 53.9 MN 316498. 1950.0 0.6 106748. 90465. 3866649. 757026. 78.0 55.1 MX 1950.0 4.8 140410. 90465. 416302656. 150314016. 32075.6 25297.6 912600.1 619.7 SM 57864784. 42337784. ΑV 889536. 321184. 68.5 54.1 1950.0 123643. 90465. MONTHLY SUMMARY (OCT) MN 0. 0.0 0.0 0. 0. 2677554. ΜX 567950. 70.1 54.7 1950.0 3.4 140410. 90465.

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YEARLY SUMMARY

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MONTHLY SUMMARY (NOV)

MONTHLY SUMMARY (DEC)

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RRAI	ENTECH ENGINE	RING 19603		B SOFTWARE DEVELOPMENT INC MONMOUTH - MYER CENTER, NJ	DOB-2.1D 6/26/1996 14:53: 7 PDL RUN 1 PTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RP_2	= HOURI	LY-REPORT			PAGE 1- 1
MMDDHH	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE	
	R - BOILE	R R		R	
	LOAD	BLECTRIC		CAPACITY	
	LOND	USE	-	RUNNING	
	BTU/HR		BTU/HR	BTU/HR	
	(1)	(3)	(4)	(7)	
MONTHLY	SUMMARY (JAN)				
		13190.	235139.	4100792.	
MX	3799679.	13190. 90217.	235139. 4616031.	4100792.	
SM	679282560.	38912236.	4616031. 959069696.	2017589120.	
AV	1380656.		1949329.		
MONTHT.V	SUMMARY (FEB)				
	13589.	1196.	21318.	4100792.	
MX			4920951.	4100792.	
SM		33164520.		1820750976.	
AV					
MONTHLY	SUMMARY (MAR)				
MON	13589.	1196.	21318.	4100792.	
MX	2232132.	90217.	2960639.	4100792.	
SM	2232132. 392289056.	28610828.	586235520.	1919170048.	
AV	838225.		1252640.	4100791.	
MONTHLY	SUMMARY (APR)				
MN	13589.	1196.	21318.	4100792.	
MIX	1720228.	90217.	21318. 2395328.	4100792.	
	122128672.		187781088.	1919170304.	
AV		21295.	401242.	4100791.	
MONTHLY	SUMMARY (MAY)				
MIN	٥.	0.	0.	0.	•
MX	292716.	25759.	459205.		
SM	13872808.	1220807.		984189952.	
AV	28197.	2481.	44234.	2000386.	
MONTHLY	SUMMARY (JUN)			_	
MIN	0.	0.			
MX	0.		0.		
SM	0.	0.	0.		
AV	0.	0.	0.	0.	
	Y SUMMARY (JUL)				
MN	0.	0.			
MX	0.				
SM	0.	0.	0.	0.	
AV	0.	٥.	0.	0.	

	ENTECH ENGINEE ING, PA = HOURI	RING 19603 LY-RBPORT	EZDOR - ELITE	S SOFTWARE DE	VELOPMENT : ER CENTER,	INC NJ	PIMOAC	DOR-	2.1D SIM N	6/2 ICA H2	6/1996 0 ONLY	14:5 W/OA SC	HD1	PDL PAGE	
	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE											
	R R	R	R	R											
	LOAD	BLECTRIC	FUEL	CAPACITY											
	LOAD	USB	USE	RUNNING											
	BTU/HR		BTU/HR	BTU/HR											
	(1)	(3)	(4)	(7)											
MONTHLY	SUMMARY (AUG)										•				
MN	0.	0.	0.	0.											
MIX	0.	0.	0.	0.											
SM	0.	0.	0.	0.											
ΑV	0.	0.	0.	0.											
MONTHLY	SUMMARY (SEP)														
MN	0.	0.	0.	0											
MX	0.	0.	0.	0											
SM	o.	0.	0.	0											
AV	0.	0.	0.	0											
MONTHIT.V	SUMMARY (OCT)														
MN	0.	0.	0.	0											
MX	790137.	69532.	1239547.	4100792											
SM	23044680.	2027932.	36151900.	1033399424											
AV	45724.	4024.	71730.	2050396	•										
MONTHELY	SUMMARY (NOV)														
MN	13589.	1196.	21318.	4100792											
MX	2289986.	90217.	3023764.	4100792											
SM	269184288.	20775456.	407937696.	1968379776											
AV	560801.	43282.	849870.	4100791	•										
MONTHI V	SUMMARY (DEC)														
MN	13589.	1196.	21318.	4100792	•		•								
MX	2651084.	90217.	3414244.	4100792	•										
SM	615147904.	37391884.	881645376.	2017588992											
AV	1250301.	76000.	1791962.	4100791	•										
VRART.V	SUMMARY														
MN	0.	0.	0.	O											
MIX	4100792.			4100792											
SM	2704997376.			13680238592											
AV	471583.	29998.	681778.												

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:53: 7 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- EV-B COST OF FUELS AND UTILITIES

SOURCE	ENERGY UNIT (BTU)	UNIFORM COST /UNIT (\$)	COST ESCLA- ATION RATE	MIN MNTHLY CHARGE (\$)	RATE LIMIT /UNIT (\$)	FIXED MNTHLY CHARG1 (\$)	FIXED MNTHLY CHARG2 (\$)	ASSIGN- SCHEDULE (U-NAME)	ASSIGN- CHARGE1 (U-NAME)	ASSIGN- CHARGE2 (U-NAME)
BLECTRIC	3413.00 138690.00	0.0000	5.000		1000000.000	0.00	0.00	YELEC1		

	BLECTRIC	PUBL-OIL	
ONTH	UNIT=	UNIT=	
	3413.00	138690.00	
ran -			
ENERGY CONSUMPTION (UNIT/MO)	437963.	8353.	
PEAK DEMAND (UNIT/HR)	1457.		
TOTAL COST (\$)	43972.25		
ZEB	400/4120	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	393296.	6604.	
ENERGY CONSUMPTION (UNIT/MO)			
PEAK DEMAND (UNIT/HR)	1457.	35.	
TOTAL COST (\$)	40760.73	3896.21	
IAR			
ENERGY CONSUMPTION (UNIT/MO)	455580.		
PEAK DEMAND (UNIT/HR)	1457.	21.	
TOTAL COST (\$)	45238.93		
APR			
ENERGY CONSUMPTION (UNIT/MO)	429387.	1519.	
PEAK DEMAND (UNIT/HR)	1449.	17.	
	43288.15		
TOTAL COST (\$)	*3400.13	070.70	
MAY	E26720	198.	
ENERGY CONSUMPTION (UNIT/MO)			
PEAK DEMAND (UNIT/HR)	1943.		
TOTAL COST (\$)	55242.44	116.83	
אטנ			
ENERGY CONSUMPTION (UNIT/MO)	664362.	0.	
PEAK DEMAND (UNIT/HR)	2022.	0.	
TOTAL COST (\$)	70361.52	0.00	
JUL			
ENERGY CONSUMPTION (UNIT/MO)	666001.	0.	
PEAK DEMAND (UNIT/HR)	2008.	0.	
TOTAL COST (\$)	70081.58		
ADG	,0001.50	0.00	
ENERGY CONSUMPTION (UNIT/MO)	697341.	0.	
		0.	•
PEAK DEMAND (UNIT/HR)	2009.		
TOTAL COST (\$)	72822.00	0.00	
\$EP		_	
ENERGY CONSUMPTION (UNIT/MO)			
PRAK DEMAND (UNIT/HR)	1951.	0.	
TOTAL COST (\$)	66476.63	0.00	
OCT			
ENERGY CONSUMPTION (UNIT/MO)		310.	
PEAK DEMAND (UNIT/HR)	1848.	9.	
TOTAL COST (\$)	51533.05	183.03	
NOV			
ENERGY CONSUMPTION (UNIT/MO)	414840.	3269.	
PEAK DEMAND (UNIT/HR)	1457.	22.	
TOTAL COST (\$)	42309.72		
DEC (\$)			
ENERGY CONSUMPTION (UNIT/MO)	436376.	7437.	
		7437. 25.	
PRAK DEMAND (UNIT/HR)	1457.		
TOTAL COST (\$)	43858.15	4387.78	
TOTAL			
ENERGY CONSUMPTION (UNIT/YR)			
PBAK DEMAND (UNIT/HR)	2022.		
TOTAL COST (\$)	645945.13	19163.94	

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-B SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
AN								
	4OPPKKWH	744	437963.	31489.53	1457.	1457.	0.00	
	BONPKDMHTG	252	298671.	0.00	1457.	1457.	12482.72	
					•			43972.25
EB								
	40FPKKWH	672	393296.	28278.01	1457.	1457.	0.00	
	BONPKDMHTG	228	269225.	0.00	1457.	1457.	12482.72	
								40760.73
AR								
	40PPKKWH	744	455580.	32756.21	1457.	1457.	0.00	
	BONPKDMHTG	276	325452.	0.00	1457.	1457.	12482.72	4E338 03
								45238.93
PR				20000 62	1440	1449.	0.00	
	4OFPKKWH	720	429387.	30872.93	1449. 1449.	1449. 1449.	12415.23	
	BONPKDMHTG	252	296413.	0.00	1449.	1449.	12413.23	43288.15
								43200.43
(AY			£2£722	38591.05	1943.	1943.	0.00	
	40PPKKWH	744	536732. 340085.	0.00	1943.	1943.	16651.39	
	BONPKDMHTG	252	340085.	0.00	1945.	2515.	20032.03	55242.44
TUN								
ON	40PPKKWH	456	243672.	17520.00	1144.	1144.	0.00	
	BONPKDMCL	264	420690.	0.00	2022.	2022.	19144.21	
	BONPKKWH	264	420690.	33697.30	2022.	2022.	0.00	
	BOMERICANI	207						70361.52
IUL.								
	40FPKKWH	504	277917.	19982.25	1123.	1123.	0.00	
	BONPKDMCL	240	388083.	0.00	2008.	 2008. 	19013.84	
	BONPKKWH	240	388083.	31085.49	2008.	2008.	0.00	
								70081.58
AUG						****	0.00	
	40fpkkwh	468	251131.	18056.33	1151.	1151. 2009.	0.00 19024.27	
	BONDKDWCT	276	446210.	0.00	2009. 2009.	2009.	0.00	
	BONPKKWH	276	446210.	35741.40	4009.	2007.	0.00	72822.00
								. 2022 - 00
SEP	ACHDYWII	468	236900.	17033.13	1116.	1116.	0.00	
	40fpkkwh Bonpkdmcl	468 252	236581.	0.00	1951.	1951.	18478.37	
	BONPKEWH	252	386581.	30965.12	1951.	1951.	0.00	
	BOMPARMA	434	230302.					66476.63
OCT								
	40FPKKWH	744	496446.	35694.44	1848.	1848.	0.00	
	BONPKDMHTG	240	311527.	0.00	1848.	1848.	15838.62	
								51533.05
VON								
	40fpkkwh	720	414840.	29827.00	1457.	1457.	0.00	
	BONPKDMHTG	240	282675.	0.00	1457.	1457.	12482.72	40200 55
								42309.72

EZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:53: 7 EDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING 19603 READING, PA 19603 4130 REPORT- ES-B SUMMARY OF ELECTRICITY CHARGES CONSUMPTION ENERGY MEASURED BILLING DEMAND TOTAL CHARGE-CHARGES ASSIGNMENT LENGTH BY C-A CHARGE DEMAND DEMAND CHARGE MONTH (U-NAME) (HR/MO) (KWH) (\$) (KW) (KW) (\$) (\$) DEC 436376. 31375.43 1457. 1457. 0.00 40FPKKWH 744 12482.72 BONPKDMHTG 252 298373. 0.00 1457. 1457. 43858.15 6251806. 462965.63 182979.52 645945.13 TOTAL

RE RS_1	ENTECH ENGINE ADING, PA = HOUR	BERING 19603 RLY-REPORT			DEVELOPMENT INC DOB-2.1D 6/26/1996 14:55:35 SDL RUN 1 MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1 PAGE 1- 1
MMDDHH	1SMCAHUS ZR	2SPERFC	3SPERFC	4SPERFC	
	SUPPLY	SUPPLY	SUPPLY	SUPPLY	
	BLECTRIC	BLECTRIC	BLECTRIC	ELECTRIC	
	KW	KW	KW	KW	1) ACA STRANCE
					1V ()
	(49)	(49)	(49)	(49)	0
					MCA SUMER SEABARK @ 80°
	Y SUMMARY (JAN)			1.786	Econo Della (D. E)()
MN	30.066	1.523	1.523 1.523	1.786	
MX	30.066	1.523		450.173	
SM	7576.734	383.846	383.846 1.523	1.786	^
· AV	30.066	1.523	1.523	1.700	ON. PEAR DEAGE
					a land FAGE
	Y SUMMARY (FEB)	1 533	1.523	1.786	
MN	30.066	1.523	1.523	1.786	$\mathcal{O}_{\mathcal{N}}$
MX	30.066	1.523 347.290	347.290	407.299	
SM	6855.140 30.066	1.523	1.523	1.786	
AV	30.066	1.523	1.525	1.700	
MONTHI	Y SUMMARY (MAR)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	8298.327	420.403	420.403	493.046	
AV	30.066	1.523	1.523	1.786	
	Y SUMMARY (APR)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	7576.734	383.846	383.846	450.173 1.786	
AV	30.066	1.523	1.523	1.700	
MONTHI	Y SUMMARY (MAY)				
MN	30.066	1.523	1.523	1.786	•
MX	30.066	1.523	1.523	1.786	·
SM		383.846	383.846	450.173	
AV		1.523	1.523	1.786	
	LY SUMMARY (JUN)				
MIN		1.523	1.523	1.786	
MX		1.523	1.523	1.786	
SM		402.125	402.125	471.610 1.786	
AV	30.066	1.523	1.523	1./86	
MONTE	LY SUMMARY (JUL)	١			
MN		1.523	1.523	1.786	
MIX		1.523	1.523	1.786	
SM		365.568	365.568	428.736	
			1.523	1.786	

ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 PA READING, - HOURLY-REPORT RS_1 -----4SPERFC 3SPERFC 1SMCAHUS ZR SUPPLY SUPPLY SUPPLY SUPPLY ELECTRIC BLECTRIC BLECTRIC RECTRIC KW KW KW ---- (49) --- (49) ---- (49) --- (49) MONTHLY SUMMARY (AUG) 1.786 1.523 30.066 1.523 MN 1.523 1.786 30.066 1.523 MX 420.403 420.403 493.046 SM 8298.327 1.786 1.523 1.523 ΑV 30.066 MONTHLY SUMMARY (SEP) 1.786 1.523 1.523 30.066 1.523 1.523 383.846 1.786 30.066 MX 450.173 7576.734 383.846 SM 1.786 1.523 30.066 MONTHLY SUMMARY (OCT) 1.786 1.523 1.523 30.066 1.786 428.736 1.523 1.523 MX 30.066 365.568 365.568 7215.937 SM 1.786 1.523 30.066 1.523 AΨ MONTHLY SUMMARY (NOV) 1.786 30.066 1.523 1.523 MN 1.523 30.066 1.523 365.568 365.568 428.736 7215.937 SM 1.786 1.523 30.066 ΑV MONTHLY SUMMARY (DEC) 1.786 30.066 30.066 1.523 1.523 MN 1.523 MX 1.523 383.846 450.173 7576.734 1.786 ΑV 30.066 YEARLY SUMMARY 1.523 1.786 30.066 MN MX 1.523 1.786 30.066 1.523 4606.157 4606.157 5402.074 90920.805 1.523 1.786 30.066 ΑV

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1

PAGE 2- 1

17.562

17.562

17.562

4214.785

29.469

29.469

29.469

7072.463

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

ENTECH ENGINEERING

MONTHLY SUMMARY (JUL)

23.912

23.912

23.912

5738.880

29.253 29.253

7020.720

29.253

MN

MX

ΑV

DOB-2.1D 6/26/1996

14:55:35 SDL RUN 1

READ	ING, PA	19603	4130.05 FT.	MONMOUTH -	MYER	CENTER,	ŊJ	FIMOACO	- SIM	MCA	H20	ONLY	W/OA	SCHD1			-
RS 2	= HOUR	LY-REPORT													PAGE	2-	1
	SSZF2MID	SSFZ3MID	SSZF4MID	OSMCAHUS ZR													
	SUPPLY	SUPPLY	SUPPLY	SUPPLY													
	BLECTRIC	BLECTRIC	BLECTRIC	RLECTRIC													
	KW	KW	KW	KW													
	(49)	(49)	(49)	(49)													
MANTEST.V	SUMMARY (AUG)																
MN		20 253	29.469	17 562													
			29.469														
SM	45.914 4500 711	27.233	8133.333	4847.002													
AV	6599.711 23.912		29.469														
	23.712	23.233	45.405	171501													
MONTHLY	SUMMARY (SEP)																
MIN	23.912	29.253	29.469	17.562													
MIX	23.912	29.253	29.469	17.562													
SM	6025.824	7371.756	29.469 7426.086	4425.524													
AV	23.912	29.253	29.469	17.562													
	SUMMARY (OCT)																
MN	23.912	29.253	29.469	17.562													
MX	23.912	29.253	29.469 7072.463	17.562													
SM		7020.720	7072.463	4214.785													
AV	23.912	29.253	29.469	17.562													
MONTHLY	SUMMARY (NOV)																
MN	23.912	29.253	29.469	17.562													
MX	23.912	29.253	29.469	17.562													
SM	5738.880	7020.720	7072.463	4214.785													
AV	23.912	29.253	29.469	17.562													
	SUMMARY (DEC)																
MN			29.469					•									
MX	23.912	29.253	29.469 7426.086	17.562 4425.524													
SM																	
AV	23.912	29.253	29.469	17.562													
YEARLY :	SUMMARY																
MN	23.912	29.253	29.469	17.562													
MX	23.912	29.253	29.469 29.469	17.562													
SM	72309.883	88461.070		53106.289													
ΑV	23.912	29.253	29.469	17.562													

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1

ENTECH ENGINEERING

RZDOR - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1 ENTECH ENGINEERING
READING, PA 19603
HOURLY-REPORT 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RS_3 ···__ MMDDHH 1EXTPER 1EXTPER 1INTPER 1INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP F F F ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 73.1 MN 72.0 73.4 MX 75.0 75.4 72.0 75.9 75.0 18891.0 18851.0 18846.0 18835.7 SM 74.8 74.8 74.7 MONTHLY SUMMARY (FRB) 75.0 74.1 75.0 75.6 72.0 73.0 MN 75.0 76.0 SM 17100.0 17093.5 16992.0 17050.2 75.0 74.5 75.0 ΔV MONTHLY SUMMARY (MAR) 75.0 74.3 75.0 80.8 74.4 75.0 MN 75.0 80.7 MX SM 20700.0 20809.9 20700.0 20825.4 75.0 75.5 AV 75.0 75.4 MONTHLY SUMMARY (APR) 74.5 75.0 74.6 75.0 90.3 75.0 75.0 90.7 MX SM 18900.0 19587.4 18900.0 19616.6 75.0 MONTHLY SUMMARY (MAY) 75.0 74.7 97.5 75.0 75.0 75 5 97.0 MX 75.0 SM 18900.0 19753.6 18900.0 19892.4

75.0

75.0

75.0

75.0

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75.0

MONTHLY SUMMARY (JUN)

75.0

75.0

75.0

MONTHLY SUMMARY (JUL) 75.0 75.2

MN

ΜX

ΑV

MN

75.0 75.2 75.0 77.9

SM 19800.0 20075.2 19800.0 20267.0

77.5

SM 18000.0 18288.4 18000.0 18446.9 76.2

78.9

75.7

78.4

76.8

76.1

77.7

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KE 25_3	SADING,	= HOURL	r-REPORT	
G_3				
	1extper	1EXTPER	1INTPER	LINTPER
	THERMOST	ZONE	THERMOST SETPOINT F	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P	P	F	P
	(7)	(6)	(7)	(6)
MONTH	LY SUMMAR	Y (AUG)		
MN	75.0	75.2	75.0	75.8
MX	75.0	77.6	75.0 20700.0	77.7
SM	20700.0	21040.6	20700.0	21173.5
AV	75.0	76.2	75.0	76.7
MONTH	LY SUMMAR	Y (SEP)		
MN	75.0	75.0	75.0 75.0	75.0
MIX	75.0	77.3	75.0	77.3
SM	18900.0	19111.7	18900.0	19182.6
AV	75.0	75.8	75.0	76.1
MONTE	TLY SUMMAI	RY (OCT)	3 75.0 5 75.0	
M	75.0	74.8	75.0	74.3
MO	75.0	84.0	5 75.0	83.7
SI	1 18000.	18375.	18000.0	18380.8
A		76.	6 75.0	76.6
MONTT	HLY SUMMA	RY (NOV)		
M	N 75.	0 74.	4 75.0 8 75.0 1 18000.0	74.2
M	x 75.	0 90.	8 75.0	91.1
Si	M 18000.	0 18311.	1 18000.0	18335.8
	v 75.		3 75.0	76.4
MONT	EMMITS V.TE	RY (DEC)		
	N 75.	0 74.	1 72.0 2 75.0	73.7
м	x 75.	0 78.	2 75.0	78.1
	M 18900.	0 18903.	2 75.0 1 18879.0	18931.9
A	v 75.	0 75.	0 74.9	75.1
Voxe	LY SUMMAR	v		
I ÇAK	תור מטוייטים בעט חל אי	0 73.	4 72.0	73.0
	ny 75	n 97	4 72.0 5 75.0	97.0
	M 226791	0 230200	5 226617.0	230938.8
	V 75		.1 74.	76.4

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1
HOURLY-REPORT RS_4 MMDDHH 2EXTPER 2EXTPER 2INTPER 2INTPER THERMOST ZONE SETPOINT TEMP THERMOST ZONE SETPOINT TEMP F ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 72.0 72.4 78.6 72.0 72.4 MN 79.3 75.0 ΜX 75.0 18423.0 18641.9 18435.0 18688.2 73.2 74.2 AV 73.1 74.0 MONTHLY SUMMARY (FEB) 72.0 72.7 78.8 72.0 72.7 75.0 75.0 79.6 SM 16749.0 16994.1 16764.0 17050.9 73.5 74.8 74.5 ΑV 73.5 MONTHLY SUMMARY (MAR) MN 72.0 72.7 72 7 72.0 MX 75.0 85.1 75.0 86.0 SM 20445.0 21047.0 20451.0 21129.1 ΑV 74.1 76.3 MONTHLY SUMMARY (APR) MN 72.0 72.8 75.0 100.4 72.0 75.0 72.8 101.6 ΜX SM 18840.0 21316.4 18846.0 21481.7 85.2 74.8 AV 74.8 84.6 MONTHLY SUMMARY (MAY) 72.0 71.4 75.0 104.4 72.0 71.5 105.1 75.0 MX SM 18876.0 20721.0 18876.0 20808.5

AV 74.9 82.3 MONTHLY SUMMARY (JUN)

75.0

MONTHLY SUMMARY (JUL)

75.0

MN MX

AV

MN

MX

75.0 74.4 75.0 75.8

75.0 74.5 75.0 75.7

SM 19800.0 19824.3 19800.0 19820.9

SM 18000.0 18036.0 18000.0 18032.6

75.2

75.1

75.0

75.0

75.0

75.0

75.0

75.0

75.8

74.5

75.7

75.1

75.1

RI	RADING,	PA	19603	4130
RS_4		= HOURL	-REPORT	
			21NTPRR	ZINTPER
	THERMOST SETPOINT F	ZONE	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	F	P	F	P
	{ 7}	(6)	(7)	(6)
MONTH	LY SUMMAR	Y (AUG)		
MN	75.0	74.5	75.0	74.5
MX	75.0	75.8	75.0	75.8
SM	75.0 75.0 75.0 20700.0	20741.3	20700.0	20741.6
AV	75.0	75.1	75.0	75.2
MONTH	T.Y SUMMAR	Y (SEP)		
	72.0			73.9
MX	75.0	75.5	75.0	75.5
SM	18897.0	18872.1	18897.0	18878.9
	75.0			74.9
MONTE	ILY SUMMAR	v (OCT)		
MI	72 0	70.5	72.0	71.4 94.6
MS	75.0	92.5	75.0	94.6
S.	1 17976.0	18930.8	17985.0	19083.1
7A	74.9	78.9	74.9	79.5
MONTS	ily summar	Y (NOV)		
M	72 0	72.8	72.0	72.8
M	75.0	94.2	75.0	72.8 95.0
SI	17853.0	18945.8	17868.0	19090.0
A'	74.4	78.9	74.4	79.5
MONTH	HT.Y SUMMAN	Y (DEC)	•	72.6
M	N 72 (72.0	5 72.0	72.6
M	x 75.0	82.	2 75.0	83.5
51	M 18411.	18695.	1 18432.0	18741.0
				74.4
-			_	

MN 72.0 70.5 72.0 71.4 MX 75.0 104.4 75.0 105.1 SM 224970.0 232766.0 225054.0 233546.4 AV 74.4 77.0 74.4 77.2

YRARLY SUMMARY

	ENTECH	ENGINEER	19603	RZDOB
RE	RADING,	PA	19603	4130.
RS_5	ADING,	= HOURLY	-REPORT	
MMDDHH	3EXTPER	3EXTPER	3 INTPER	3 INTPER
	THERMOST	ZONE	THERMOST SETPOINT F	ZONE
	SETPOINT	TEMP	SELEGINI	TEMP
	P	F	F	ħ.
	, 41		(7)	(6)
	(/)	(6)	(/)	(8)
MONTHE	LY SUMMARY	/ /.TANI		
MONTH	72 0	72 4	72 0	72.4
MY	72.0 75.0 18423.0	78.5	75.0	79.3
CM	18423 0	18641 9	18435 0	18688.2
AV	73.1	74.0	73.2	74.2
•••	,,,,	,	,	
MONTH	LY SUMMARY	(FRB)		
MN	72.0 75.0 75.0 16749.0	72.7	72.0	72.7
MX	75.0	78.8	75.0	79.6
SM	16749.0	16994.1	16764.0	17050.9
AV	73.5	74.5	73.5	74.8
MONTH	LY SUMMAR	Y (MAR)		
MN	72.0	72.7	72.0	72.7
MX	75.0	85.1	75.0	86.0
SM	72.0 75.0 20445.0	21047.0	20451.0	21129.1
AV	74.1	76.3	74.1	76.6
MONTH	72.0 75.0 18840.0	Y (APR)		
MN	72.0	72.8	72.0	72.8
MX	75.0	100.4	75.0	101.6
SM	18840.0	21316.4	18846.0	21481.7
AV	74.8	84.6	74.8	85.2
		TP (1873.75)		
MONTH	LY SUMMAR	1 (MAI)	72 0	71 6
MA	72.0 75.0	104.4	75.0	105.1
CIM.	18876.0	20721 0	19876 0	20808 5
AV	74.9	82.2	74.9	82.6
^,	74.3	02.2	,	02.0
MONTH	LY SUMMAR	Y (JUN)		74.4 75.8 19820.9
MIN	75.0	74.4	75.0	74.4
MX	75.0	75.8	75.0	75.8
SM	19800.0	19824.3	19800.0	19820.9
AV	75.0	75.1	75.0	75.1
MONTE	ILY SUMMAR	Y (JUL)		
MIN	75.0	74.5	75.0	74.5
MD	75.0	75.7	75.0	74.5 75.7 18032.6
SN	1 18000.0	18036.0	18000.0	18032.6
ΑV	75.0	75.2	75.0	75.1

	DAIRCA			4130
	ADING,			4130
RS_5		= HOURLY		
;	BEXTPER	3EXTPER	3 INTPER	3 INTPER
	THERMOST	ZONE	THERMOST	ZONE
			SETPOINT	
		F	P	P
	F	F	F	•
	(7)	(6)	(7)	(6)
MONTHL	Y SUMMARY	(AUG)		
MN	75.0	74.5	75.0	74.5
MX	75.0	75.8	75.0 20700.0	75.8
SM	20700.0	20741.3	20700.0	20741.6
AV	75.0		75.0	75.2
	,3.0			
MONTHL	Y SUMMAR	Y (SEP)		
MN	72.0	73.5	72.0 75.0	73.9
MX	75.0	73.5 75.5		
SM	18897.0	18872.1	18897.0	18878.9
AV			75.0	
MONTHL	Y SUMMAR	Y (OCT)		
MN	72.0	70.5	72.0	71.4
MX	75.0	92.5	75.0	94.6
SM	17976.0	18930.7	17985.0	19083.1
AV	74.9	78.9	72.0 75.0 17985.0 74.9	79.5
		Y (NOV)		
MONTHI	Y SUMMAR	Y (NOV)	 -	72.0
MN	72.0	72.8	72.0 75.0	72.8
MX	75.0	94.2	75.0	95.0
			17868.0	
AV	74.4	78.9	74.4	79.5
MONTH	LY SUMMAR	Y (DBC)		
MN	72.0	72.6	72.0	72.6
MX	75.0	82.2	75.0	83.5 18741.0
SM	18411 0	18695.1	18432.0	18741.0
AV		74.2		74.4
^,	73.4	. , , , ,	/	
YEARL	Y SUMMARY	•		
MIN	72.0	70.5	72.0	71.4 105.1
MX	75.0	104.4	75.0	105.1
SM	224970.0	232765.6	225054.0	233546.4
AV	74.4	77.0	74.4	77.2

BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:55:35
4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING DOB-2.1D 6/26/1996 14:55:35 SDL RUN 1 PA 19603 READING, - HOURLY-REPORT MMDDHH 4EXTPER 4EXTPER 4INTPER 4INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP P P ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 72.4 76.3 72.0 MN 72.0 72.4 75.0 75.0 SM 18234.0 18420.4 18240.0 18440.7 72.4 ΔV 72.4 73.1 73.2 MONTHLY SUMMARY (FEB) 72.6 72.0 MN 72.0 72.6 75.0 76.2 75.0 MX 77.0 16533.0 16727.1 16554.0 16757.4 SM AV 72.5 73.4 72.6 MONTHLY SUMMARY (MAR) 72.6 72.0 MN 72.0 72.6 82.6 75.0 83.1 SM 20268.0 20624.0 20286.0 20662.6 ΔV 73.4 74.7 73.5 74.9 MONTHLY SUMMARY (APR) 72.8 94.4 72.0 75.0 72.0 MN 72.8 MX 75.0 95.2 18786.0 20246.1 18786.0 20328.8 ΑV 74.5 80.3 74.5 80.7 MONTHLY SUMMARY (MAY) MN 72.0 69.2 72.0 69.4 101.1 MX 75.0 101.1 75.0 101.5 SM 18840.0 20109.5 18846.0 20149.2 74.8 79.8 MONTHLY SUMMARY (JUN) 74.2 MN 75.0 ΜX 75.0 75.8 75.0 75.8

SM 19800.0 19806.8 19800.0 19806.5

75.0

75.0

75.0

75.7

75.0

74.4

75.7

75.1

SM 18000.0 18025.5 18000.0 18025.0

75.0

75.0 75.0

75.0

MONTHLY SUMMARY (JUL)

PAGE 1- 1

SM 17670.0 18309.8 17685.0 18364.5 76.3

SM 18240.0 18478.9 18243.0 18498.7

73.3

65.1

MN 72.0 65.1 72.0 66.1 MX 75.0 101.1 75.0 101.5 SM 223836.0 228635.7 223917.0 229039.3

75.6 74.0

MONTHLY SUMMARY (DEC) MON 72.0 72.6 MOX 75.0 79.8

74.0

MX

ΑV

YEARLY SUMMARY MIN 72.0

73.7

72.0 75.0

72.0

72.4

72.6 80.7

66.1

PAGR 2- 1

	/																			
		RNGINER	RING		RZDOR -	RT.T1	אר פטד	TWAPR	DRVR	T.O DMIKNYI	INC	T	OOR-7	10	6/26	1996	14	1.55.25	ent	
RI	EADING,	PA	19603		4130.05	FT.	MONMO	UTH -	MYER	CENTER	, NJ	PTMOAC	0 - 9	IM MC	4 H20	ONLY	W/OA	SCHD1	SUL	•
RS_7		= HOURL	Y-REPORT														•		PAGR	
MMDDHH	2MIDL	2MIDL	3MIDL	3MIDL																
	THERMOST	ZONE	THERMOST	ZONE																
	SETPOINT	TEMP	SETPOINT	TEMP																
	F	F	P	F																
			(7)		- \															
	(/)	(6)	(7)	(6)															
MONTH	LY SUMMAR	Y (JAN)																		
MIN	75.0	74.7	75.0	74	. 8															
MX	75.0	76.0	75.0	76	. 0															
SM	18900.0	19049.2	18900.0	19056	. 2															
AV	75.0	75.6	75.0	75	. 6															
1403	LY SUMMAR	r (1977)																		
MIN		1 (FBB) 74.9		74	۵															
MIX																				
			17100.0																	
AV			75.0																	
Α,	/5.0	75.0	,,,,		. •															
MONTH	LY SUMMAR	Y (MAR)																		
MN	75.0	74.9	75.0	74	. 9															
MX	75.0	82.1	. 75.0	82	.1															
SM	20700.0	20961.8	20700.0	20967	.7															
AV	75.0	75.9	75.0	76	. 0															
MONTH	LY SUMMAR	(2DD)																		
MN		1 (MPR) 75.1		75	7															
MIX			75.0																	
			18900.0																	
AV			75.0																	
A	,,,,	, , , ,	,,,,,	,,																
	LY SUMMAR																			
MIN			. 75.0									•								
MX																				
			18900.0																	
AV	75.0	79.2	2 75.0	79	.3															
МОМТИ	LY SUMMAR	Y (JUN)																		
MN		75.4	75.0	75	. 4															
MX																				
			19800.0																	
AV			75.0																	
W0:		** / **** *																		
MONTH	LY SUMMAR 75.0		75.0	75	6															
MX			75.0																	
			18000.0																	
AV										•										
				, ,																

MX 75.0 98.3 75.0 98.3 SM 226800.0 232233.6 226800.0 232329.7 76.8

75.0

YEARLY SUMMARY 75.0

75.0

MN

ΑV

DOB-2.1D 6/26/1996 14:55:35 SDL RUN 1

PAGE 2- 1

RI	ENTECH EADING,	PA ENGINEE	RING 19603		4130.05	FT.	MONM	- אדטכ	MYER	CENTE	R, NJ	PTM	DACO -	- SI	M MCZ	H20	ONLY	W/OA	SCHD1	J 001	. KOL	•
S_8		= HOURL	Y-REPORT																	PAGE	1-	
			OINTEXTP	OINTEX																		•
			BR	BR																		
			THERMOST																			
			SETPOINT																			
	P	P	P	P																		
	(7)	(6)	(7)	(6)																	
MONTH	LY SUMMARY	(JAN)																				
MIN	72.0	72.8	72.0	72	. 8																	
MX	75.0	74.8	75.0	74	.9																	
SM	18543.0	18602.9	18642.0	18654	. 2																	
AV	73.6	73.8	74.0	74	.0																	
MONTH	LY SUMMAR!	(FEB)																				
MN	72.0	72.8	72.0	72	. 8																	
MX	75.0	75.0	75.0	75	.3																	
SM	16908.0	16894.1	16986.0	16941	.0																	
AV	74.2	74.1	74.5	74	.3																	
MONTH	LY SUMMAR	Y (MAR)																				
MN	72.0	73.0			.0																	
MX																						
SM	20652.0	20604.3	20682.0	20670	.1																	
AV	74.8	74.7	74.9	74	. 9																	
MONTH	LY SUMMAR	Y (APR)																				
MN	72.0	73.9	75.0	74	. 2																	
MX	75.0	88.3	75.0	91	1																	
SM			18900.0																			
AV	75.0	76.4	75.0	77	'.1																	
MONTH	LY SUMMAR																					
MIN												•										
MX			75.0		.4																	
			18900.0																			
AV	75.0	77.3	75.0	78	1.1																	
	LY SUMMAR																					
MN																						
MX																						
SM AV			19800.0 75.0																			
					-																	
	LY SUMMAR																					
MN																						
MX																						
			18000.0																			
ΑV	75.0	75.5	75.0	75	.9																	

##IDL 4#IDL 0INTEXTP DINTEXTP FERMOST ZONE SISTOINT TEMP F P P P P P P P P P P P P P P P P P P	RS_8	EADING,	PA = HOURL	19603 Y-REPORT	BZDOR 4130.0	5 FT. MOI	- HTUOMIN	MYER CENTER	, NJ	FIMOACO	- SIM MC	A H20 (NLY	W/OA SC	P	AGE	2-	
THERMOST ZONE SETPOINT TEMP P P P P P P P P P P P P P P P P P P																		
SETPOINT TEMP P P P P P P P P P P P P P P P P P P																		
P P P F F F F F F F F F F F F F F F F F																		
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MN 72.0 73.0 75.0 74.0 MX 75.0 87.9 75.0 91.0 SM 17958.0 18066.4 18000.0 18191.2 AV 74.8 75.3 75.0 75.8 MONITHLY SUMMARY (DEC) MN 72.0 72.9 72.0 72.9 MX 75.0 76.5 75.0 77.4 SM 18678.0 18675.6 18783.0 18745.8 AV 74.1 74.1 74.5 74.4 YEARLY SUMMARY MN 72.0 72.8 72.0 72.8 MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0	A ¹	75.0	75.5	75.0	76.1													
MN 72.0 73.0 75.0 74.0 MX 75.0 87.9 75.0 91.0 SM 17958.0 18066.4 18000.0 18191.2 AV 74.8 75.3 75.0 75.8 MONITHLY SUMMARY (DEC) MN 72.0 72.9 72.0 72.9 MX 75.0 76.5 75.0 77.4 SM 18678.0 18675.6 18783.0 18745.8 AV 74.1 74.1 74.5 74.4 YEARLY SUMMARY MN 72.0 72.8 72.0 72.8 MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0	MONET	TV CIMMAD	y (MOM)															
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YEARLY SUMMARY MN 72.0 72.8 72.0 72.8 MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0																		
MN 72.0 72.8 72.0 72.8 MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0	A'	V 74.1	74.1	. 74.5	74.4													
MN 72.0 72.8 72.0 72.8 MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0	YEAR	LY SUMMARY	,															
MX 75.0 95.5 75.0 99.4 SM 225933.0 227583.6 226293.0 228777.0				72.0	72.8													
AV 74.7 75.3 74.8 75.7	S	M 225933.0	227583.6	226293.0	228777.0													
	A	V 74.7	75.3	74.8	75.7													

RNTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- FV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

			*******	******		
	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER
RQUIPMENT	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD	SIZE INSTD
	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL	(MBTU/H) AVAIL
HW-BOILER	4.101 1 1					
UM-BOILDEK	4.101 1 1					
HERM-CENT-CHLR	7.800 1 1					
COOLING-TWR	2.379 4 4					

ENTECH	ENGINEER	ING	BZDOR -	BLI'	TE SOFTWARE	DEVELOPMEN	T INC	DOR-2.1D	6/26/1996	14:55:35	PDL RUN 1
READING,	PA	19603	4130.05	FT.	MONMOUTH -	MYER CENT	R, NJ	FTMOACO - SIM MO	A H20 ONLY	W/OA SCHD1	
REPORT- PS-C EQ	UIPMENT P	ART LOAD	OPERATION					WEAT	THER FILE- N	BWARK, NJ	

equipment			Н	ours a	r perc	ENT P	PART LOAD	RAT	10			TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	BLEC USED (MBTU)	THERMAL USED (MBTU)
	0 10	20	30	40	50	6	50 70	8	0 9	0 1	00 - 110-					
HW-BOILER	2827	616	634	478	311	139	41	28	9	4	1	5088	3096.9	0.0	202.4	4504.8
	2827	616	634	478	311	139	41	28	9	4	1					
HERM-CENT-CHLR	1286	825	408	207	244	352	266	81	3	0	0	3672	8366.2	0.0	1972.7	0.0
	1286	825	408	207	244	352	266	81	3	0	0					
COOLING-TWR	1660	651	227	116	89	77	68	102	125	115	442	3672	10338.9	0.0	807.7	0.0
	1660	CET	227	116	90	77	69	102	125	115	442					

HOT LOOP CIRCULATION PUMP ELECTRICAL USE = COLD LOOP CIRCULATION PUMP ELECTRICAL USE = 154.2 MBTU

- NOTES TO TABLE

 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS
 THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
 - 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOAC
REPORT- PS-D PLANT LOADS SATISFIED

BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:55:35 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HW-BOILER	3096.9	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	3096.9 3096.9	100.0
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-CENT-CHLR	8366.2	, 100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	8366.2 8366.2	100.0
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
ELECTRICITY	21337.4	100.0
LOAD SATISPIED TOTAL LOAD ON PLANT	21337.4 21337.3	100.0

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 86.F

EZDOR - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:55:35 PDL RUN 1 4130.05 PT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 WEATHER FILE- NEWARK, NJ

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3096.9	3096.9	0.000	0.000	0
COOLING LOADS	8366.2	8366.2	0.000	0.000	0
ELECTRICAL LOADS	21337.3	21337.4	0.000	0.000	0

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/26/1996 14:55:35 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL
REPORT- PS-H EQUIPMENT USE STATISTICS WHATHER FILE- NEWARK, NJ

вопгьмвит	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
HW-BOILER	0.148	4.101	2 20 3	4.101 5088				
HERM-CENT-CHLR	0.292	7.613	6 13 15	7.800 3672				
COOLING-TWR	0.296	9.214	6 13 15	2.379 14688				

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	202.45	4504.78
SPACE COOL	2780.41	0.00
HVAC AUX	3574.63	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.50	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.37	0.00
TOTAL	21337.36	4504.78

TOTAL SITE ENERGY 25842.22 MBTU 78.4 KBTU/SQFT-YR GROSS-AREA 78.4 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 68581.08 MBTU 208.1 KBTU/SQFT-YR GROSS-AREA 208.1 KBTU/SQFT-YR NET-AREA

78.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 10.1 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE BLECTRICITY AND/OR FUBL USED TO GENERATE BLECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

RP_1	= HOUR	LY-REPORT							PAGE 1- 1
MMDDHH	HERM-CEN T-CHLR LOAD BTU/HR	HERM-CEN T-CHLR ELECTRIC USE BTU/HR	HERM-CEN T-CHLR ENTERING COND TEM F	HERM-CEN T-CHLR LEAVING COLD TEM F	COOLING- TWR WATER FLOWRATE GAL/MIN	COOLING- TWR RANGE R	COOLING- TWR FAN BLEC BTU/HR	COOLING- TWR PUMP BLBC BTU/HR	
	(1)	(3)	(12)	(13)	(8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (JAN)								
MN	0.	0.	0.0	0.0	0.0		0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (FEB)							_	
MN	0.	0.	0.0		0.0		0.	0.	
MX	0.	0.	0.0	0.0	0.0		0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (MAR)								
MIN	0.	0.					0.	٥.	
MX	0.	0.	0.0		0.0		٥.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (APR)						_		
MN	0.	0.					0.	0.	
MX	0.	0.			0.0		0.	0.	
SM	0.	0.			0.0		0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	٥.	0.	
	Y SUMMARY (MAY)							0.	
MN	0.						. 0.		
MX	6615459.						140410.		
SM	437461248.							11941428.	
AV	1735957.	352377.	35.7	28.7	1021.4	2.2	69702.	47387.	
	Y SUMMARY (JUN)							20455	
MN	1269013.	409250.						90465.	
MX	7613137.	1600753.						90465.	
SM	1311711104.	253112768.						23882852.	
VA	4968603.	958761.	73.2	55.5	1950.0	6.2	139800.	90465.	
	Y SUMMARY (JUL)			F4 4	1050 0		120501	90465.	
MN	2474031.	532226.						90465.	
MX	7280946.	1500438					140410.		
SM	1299012736.	249199456					33696456. 140402.	21711684. 90465.	
AV	5412553.	1038331.	74.9	55.6	1950.0	6.7	140402.	70403.	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHOL

	HERM-CEN T-CHLR LOAD	HERM-CEN T-CHLR BLECTRIC USB	COND TEM	HERM-CEN T-CHLR LEAVING COLD TEM	COOLING- TWR WATER FLOWRATE	TWR RANGE	Cooling- Twr Fan Blec	COOLING- TWR PUMP RLEC	
	BTU/HR	BTU/HR	F	F	GAL/MIN	R	BTU/HR	BTU/HR	
	(1)	(3)	(12)	(13)	(8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (AUG)								
MN	1954105.	474979.	65.0	54.4	1950.0	2.6	130798.	90465.	
MX	7520791.	1567125.	86.1	56.3	1950.0	9.4	140410.	90465.	
SM	1480035840.	286303264.	20711.9	15342.0	538200.1	1833.2	38732536.	24968436.	
AV	5362449.	1037331.	75.0	55.6	1950.0		140335.		
MONTHLY	SUMMARY (SEP)								
MN	369178.	174163.	64.4	53.9	1950.0	0.6	107886.	90465.	
MX	6498493.	1307453.					140410.		
SM	968593152.	191210848.	17492.8	13876.9	491400.0	1209.6	34474932.	22797268.	
AV	3843624.	758773.	69.4	55.1	1950.0	4.8	136805.	90465.	
MONTHLY	SUMMARY (OCT)								
MN	0.						0.	0.	
MX				55.6	1950.0	6.5	140410.	90465.	
SM	207899664.		7064.5	5876.2	210600.0	274.5	13714714.	9770260.	
VA	866249.	213194.	29.4	24.5	877.5	1.1	57145.	40709.	
MONTHLY	SUMMARY (NOV)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.						0.	0.	
SM	0.	0.		0.0	0.0		0.	0.	
VA	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY (DEC)		-						
MN	0.	0.		0.0		0.0		0.	
MIX	0.	0.		0.0			0.	0.	
SM	0.	0.		0.0			0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
	SUMMARY								
MN	0.			0.0			0.	0.	
	7613137.		86.1	56.3	1950.0	9.5 7100.0	140410.		
SM	5704714240.							115071920.	
ΑV	1886480.	370302.	30.3	23.3	820.2	2.3	57900.	38053.	

	ENTECH ENGINE	BRING	EZDOE - ELIT					6/26/199			RUN	11
RBA	DING, PA	19603	4130.05 FT.	MONMOUTH - MYE	R CENTER, NJ	FIMOACO -	SIM MC	A H20 ONL	Y W/OA SCHD1			
RP_2	= HOUR	LY-REPORT								PAGE	1-	1
MMDDHH	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE								
	R	R	R	R								
	LOAD	RLECTRIC	FUEL	CAPACITY								
		USB	USE	RUNNING								
	BTU/HR	BTU/HR	BTU/HR	BTU/HR								
	(1)	(3)	(4)	(7)								
MONTHLY	SUMMARY (JAN)											
MN	13589.	1196.	21318.	4100792.								
MX	3021471.	90217.	21318. 3808477.	4100792.								
SM	137028992.		199436112.	1033399296.								
AV	543766.		791413.									
MONITURE TO	SUMMARY (FEB)											
*****		1106	21318.	4100792								
MN	13589.	90217.										
MX	1723249. 55065024.		85777768.									
SM		20710.	376218.									
AV	241513.	20/10.	3/6210.	4100751.								
MONTHLY	SUMMARY (MAR)											
MN	13589.	1196.	21318.	4100792.								
MX	1656957.	1196. 90217. 4173791.	2324611.									
SM	50730196.			1131818240.								
AV	183805.	15122.	283207.	4100791.								
MONTHLY	Y SUMMARY (APR)											
MN	13589.	1196.	21318.									
MX	1020145.	89773.										
SM	14631465.	1287569.		1033399296.								
AV	58061.	5109.	91085.	4100791.			-					
MONTHL	Y SUMMARY (MAY)											
MIN	0.	0.	0.	0.		•						
MX	178783.		280470.									
SM	3633134.	319716.	5699565.									
AV	14417.	1269.	22617.	1952758.								
MONTHL	Y SUMMARY (JUN)											
MN	0.	٥.	0.	0.								
MX	0.	0.	0.	0.								
SM	0.	0.	0.	0.								
AV	0.	0.	0.	0.								
MONTHL	Y SUMMARY (JUL)											
MN	0.	0.	0.	0.								
MX	0.			0.								
SM	0.	0.	0.	0.								
AV	0.	0.	0.	0.								

	DING,	PA	19603	EZDOR - ELI 4130.05 FT.	TE SOFTWARE MONMOUTH -	DEVELOPMENT INC	DOE	8-2.1D SIM N	6/2 ICA H2	6/1996 0 ONLY	14 W/OA	:55:35 SCHD1			
LP_2			Y-REPORT										PAGE	2- 	1
	HW-BOIL		HW-BOILE	HW-BOILE	HW-BOILE										
	R		R	R	R										
	LOAD		RLECTRIC	FUEL	CAPACITY										
			USB	USE	RUNNING										
	BTU/HR		BTU/HR	BTU/HR	BTU/HR										
	(1))	(3)	(4)	(7)										
MONTHLY	SUMMARY	(AUG)													
MN		0.	0.	0.		0.									
MX		0.	0.	0.		0.									
SM		0.	0.	0.		0.									
AV		0.	0.	0.		0.									
MONTHLY	SUMMARY	(SEP)													
MN		0.	0.	0.		0.									
MX		0.	0.	0.		0.									
SM		0.	0.	0.		0.									
AV		0.	0.	0.		0.									
MONTHLY	Y SUMMARY	(OCT)													
MN		0.	0.	0. 308091.		0.									
MX		390.		308091.	41007	92.									
SM	4380	862.	385516.	6872583.	5413045										
AV	18	254.	1606.	28636.	22554	36.									
MONTHLY	Y SUMMARY	(NOV)													
MN	13	589.	1196.	21318.	41007	92.									
MX	1254	786.	90217.	1870762. 45460880.	41007	92.									
SM	29133	240.	2513368.	45460880.	9841898	24.									
VA	121	389.	10472.	189420.	41007	91.									
MONTHL	Y SUMMARY	(DEC)													
MN		589.	1196.	21318.	41007		•								
MX				2554551.											
SM			7980622.		10333992										
AV	386	089.	31669.	594363.	41007	91.									
	SUMMARY														
MN		Ο.	0.												
MX				3808477.											
SM			30378340.												
VA	129	9596.	10046.	196477.	23758	55.									

RNTECH ENGINEERING BZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- EV-B COST OF FUELS AND UTILITIES

ENERGY SOURCE	ENERGY UNIT (BTU)	UNIFORM COST /UNIT (\$)	COST ESCLA- ATION RATE	MIN MNTHLY CHARGE (\$)	RATE LIMIT /UNIT (\$)	FIXED MNTHLY CHARG1 (\$)	FIXED MNTHLY CHARG2 (\$)	ASSIGN- SCHEDULE (U-NAME)	ASSIGN- CHARGE1 (U-NAME)	ASSIGN- CHARGE2 (U-NAME)	
BLECTRIC	3413.00	0.0000	5.000	0.00	1000000.000	0.00	0.00	YBLEC1			
FIIRL-OIL	138690.00	0.5900	5.000	0.00	1000000.000	0.00	0.00				

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- ES-D SUMMARY OF FUEL AND UTILITY USE AND COSTS

	BLECTRIC	FUEL-OIL	
MONTH	UNIT=	UNIT=	
	3413.00	138690.00	
Jan			
ENERGY CONSUMPTION (UNIT/MO)			
PEAK DEMAND (UNIT/HR)	1457.	33.	
TOTAL COST (\$)	43972.25	4928.39	
PEB			
ENERGY CONSUMPTION (UNIT/MO)	393296.	6604.	
PEAK DEMAND (UNIT/HR)	1457.	35.	
TOTAL COST (\$)	40760.73	3896.21	
MAR			
ENERGY CONSUMPTION (UNIT/MO)	455580.	4791.	
PEAK DEMAND (UNIT/HR)	1457.		
TOTAL COST (\$)	45238.93	2826.42	
APR			
ENERGY CONSUMPTION (UNIT/MO)	429387.	1519.	
PEAK DEMAND (UNIT/HR)	1449.	17.	
TOTAL COST (\$)	43288.15	896.48	
MAY			
ENERGY CONSUMPTION (UNIT/MO)	536732.	198.	
PEAK DEMAND (UNIT/HR)	1943.	3.	
TOTAL COST (\$)	55242.44	3. 116.83	
JUN			
ENERGY CONSUMPTION (UNIT/MO)	664362.	0.	
PEAK DEMAND (UNIT/HR)	2022.	0.	
TOTAL COST (\$)	70361.52	0.00	
JOL			
ENERGY CONSUMPTION (UNIT/MO)	666001.	0.	
PEAK DEMAND (UNIT/HR)	2008.	0.	
TOTAL COST (\$)	70081.58	0.00	
AUG			
ENERGY CONSUMPTION (UNIT/MO)			•
PEAK DEMAND (UNIT/HR)	2009.	0.	
TOTAL COST (\$)	72822.00	0.00	
SEP			
ENERGY CONSUMPTION (UNIT/MO)	623481.	0.	
PEAK DEMAND (UNIT/HR)	1951.	0.	
TOTAL COST (\$)	66476.63	0.00	
ocr			
ENERGY CONSUMPTION (UNIT/MO)		310. 9.	
PEAK DEMAND (UNIT/HR)	1848.		
TOTAL COST (\$)	51533.05	183.03	
NOV		2000	
ENERGY CONSUMPTION (UNIT/MO)	414840.	3269. 22.	
PEAK DEMAND (UNIT/HR)	1457.		
TOTAL COST (\$) DEC	42309.72	1928.80	
	426276	7437.	
ENERGY CONSUMPTION (UNIT/MO) PEAK DEMAND (UNIT/HR)	436376. 1457.		
TOTAL COST (\$)	43858.15		
TOTAL COST (\$)	43050.15	4307.70	
TOTAL			
ENERGY CONSUMPTION (UNIT/YR)	6251806	32481	
PEAK DEMAND (UNIT/HR)	2022.	35.	
TOTAL COST (\$)	645945.13	19163.94	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

HONTH	CHARGE- ASSIGNMENT (U-NAMB)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
JAN	40FPKKWH	744	437963.	31489.53	1457.	1457.	0.00	
	BONDKDMHTG	252	298671.	0.00	1457.	1457.	12482.72	
	BONFRAMBIG	232	2,0072.	0.00	2.57.	2457.	12402.72	43972.25
FEB								10372120
	40FPKKWH	672	393296.	28278.01	1457.	1457.	0.00	
	BONPKDMHTG	228	269225.	0.00	1457.	1457.	12482.72	
								40760.73
MAR								
	40FPKKWH	744	455580.	32756.21	1457.	1457.	0.00	
	BONPKDMHTG	276	325452.	0.00	1457.	1457.	12482.72	
								45238.93
APR				20000 02	1440		2.25	
	40FPKKWH	720	429387.	30872.93	1449.	1449.	0.00	
	BONPKDMHTG	252	296413.	0.00	1449.	1449.	12415.23	43288.15
								43288.15
MAY	40FPKKWH	744	536732.	38591.05	1943.	1943.	0.00	
	BONDKOMHTG	252	340085.	0.00	1943.	1943.	16651.39	
	HOME MANUAL C	-3-	210003.	• • • • • • • • • • • • • • • • • • • •				55242.44
JUN								
	40FPKKWH	456	243672.	17520.00	1144.	1144.	0.00	
	BONDKDMCL	264	420690.	0.00	2022.	2022.	19144.21	
	BONPKKWH	264	420690.	33697.30	2022.	2022.	0.00	
								70361.52
JUL								
	40FPKKWH	504	277917.	19982.25	1123.	1123.	0.00	
	BONPKDMCL	240	388083.	0.00 31085.49	2008. 2008.	2008. 2008.	19013.84	
	BONPKKWH	240	388083.	31085.49	2008.	2008.	0.00	70081.58
AUG								/0001.36
AUG	40FPKKWH	468	251131.	18056.33	1151.	1151.	0.00	
	BONPKDMCL	276	446210.	0.00	2009.	2009.	19024.27	
	BONPKKWH	276	446210.	35741.40	2009.	2009.	0.00	
								72822.00
SEP								
	40FPKKWH	468	236900.	17033.13	1116.	1116.	0.00	
	BONPKDMCL	252	386581.	0.00	1951.	1951.	18478.37	
	EONPKKWH	252	386581.	30965.12	1951.	1951.	0.00	
								66476.63
OCT	40FPKKWH	744	496446.	35694.44	1848.	1848.	0.00	
	BONDERMHTG	744 240	311527.	0.00	1848.	1848.	15838.62	
	PONEVENDIA	240	J	5.50			2000.02	51533.05
NOV								
	40FPKKWH	720	414840.	29827.00	1457.	1457.	0.00	
	BONPKDMHTG	240	282675.	0.00	1457.	1457.	12482.72	
								42309.72

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/26/1996 14:55:35 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

								CONTINUED
MONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	energy Charge (\$)	MRASURED DEMAND (KW)	BILLING DEMAND (XW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)

DEC								
	40FPKKWH	744	436376.	31375.43	1457.	1457.	0.00	
	BONPKDMHTG	252	298373.	0.00	1457.	1457.	12482.72	
								43858.15
TOTAL			6251806.	462965.63			182979.52	645945.13

ECO-3

ENTECH ENGINEERING READING, 19603 PA REPORT- PV-A EQUIPMENT SIZES

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 7/ 1/1996 11:18:57 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

WEATHER FILE- NEWARK, NJ

NUMBER NUMBER NUMBER SIZE INSTD NUMBER NUMBER EQUIPMENT SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSTD SIZE INSID SID SIZE INSID SIZE INSID SIZE INSID SIZE INSID SIZE INSID SIZE IN 4.038 1 1 HERM-CENT-CHLR 7.800 1 1 COOLING-TWR 2.379 4 4

Moder CAC INFILTRATION W/25% REDUCTION OFF-PEAK USIGE

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ DOR-2.1D 7/ 1/1996 11:18:57 PDL RUN 1

EQUIPMENT	0 10	20					PART LOS			90	. 10	0 - 110+	TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	ELEC USED (MBTU)	THERMAL USED (MBTU)
	0 10	20	30	40	50	0	/	, 0		9 0	- TO	0 - 110+					
HW-BOILER	3062	568	512	430	294	110	62	36	9		4	1	5088	2807.1	0.0	180.1	4064.9
	3062	568	512	430	294	110	62	36	9		4	1					
HERM-CENT-CHLR	1071	521	766	463	318	343	166	24	0		0	0	3672	8780.1	0.0	1989.2	0.0
	1071	521	766	463	318	343	166	24	ō		0	ŏ	3072	8780.1	0.0	1303.2	0.0
COOLING-TWR	1226	601	570	302	134	112	124	124	116	: 8	37	276	3672	10769.3	0.0	813.8	0.0
	1226	601	570	302	134	112	124	124	116		37	276			• • • • • • • • • • • • • • • • • • • •	223.0	3.0

HOT LOOP CIRCULATION PUMP BLECTRICAL USE = 151.9 MBTU COLD LOOP CIRCULATION PUMP BLECTRICAL USE = 924.7 MBTU

- NOTES TO TABLE

 1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS
 THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING READING, 19603 REPORT- PS-D PLANT LOADS SATISFIED

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 1/1996 11:18:57 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 11:18:57 PDL RUN 1 WEATHER FILE- NEWARK, NJ

HEATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD -----HW-BOILER 2807.1 100.0 ********* LOAD SATISFIED 2807.1 100.0 TOTAL LOAD ON PLANT 2807.1 COOLING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD ------HERM-CENT-CHLR 8780.1 100.0 -----***** LOAD SATISFIED 8780.1 100.0 TOTAL LOAD ON PLANT 8780.1 ELECTRICAL LOADS MBTU SUPPLIED PCT OF TOTAL LOAD -----ELECTRICITY 23047.1 100.0 -----------**** LOAD SATISFIED 23047.1 100.0 23047.5 TOTAL LOAD ON PLANT

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 85.F

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ (CONTINUED)------

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL, LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	2807.1	2807.1	0.000	0.000	0
COOLING LOADS	8780.1	8780.1	0.000	0.000	ō
BLECTRICAL LOADS	23047.5	23047.1	0.000	0.000	ō

ENTECH ENGINEERING BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/1/1996 11:18:57 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H BQUIPMENT USB STATISTICS WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					
вопіьмвид	OPER RATIO	LOAD (MBTU)	DAY HR	SIZB OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
						~~~~		
HW-BOILER	0.137	4.038	2 20 3	4.038 5088				
HBRM-CENT-CHLR	0.307	7.085	8 18 15	7.800 3672				
COOLING-TWR	0.308	8.543	6 13 15	2.379 14688				

ENTRCH ENGINEERING READING, 19603 EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

11:18:57 PDL RUN 1

REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE 

WEATHER PILE- NEWARK, NJ

ENERGY TYPE IN SITE METU - ELECTRICITY FUEL-OIL CATEGORY OF USE 4064.88 SPACE HEAT 180.11 SPACE COOL 2802.93 0.00 HVAC AUX 5283.90 0.00 DOM HOT WTR 0.00 0.00 AUX SOLAR 0.00 0.00 LIGHTS 10258,25 0.00 VERT TRANS 0,00 0.00 MISC EQUIP 4521.26 0.00 TOTAL 23046.46 4064.88

TOTAL SITE ENERGY TOTAL SOURCE ENERGY 73275.33 MBTU

27111.97 MBTU

82.3 KBTU/SQFT-YR GROSS-ARRA

82.3 KBTU/SOFT-YR NET-ARKA

222.4 KBTU/SQFT-YR GROSS-ARRA 222.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.8 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING
READING, PA 19603
RP_1 = HOURLY-REPORT

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
PAGE 1- 1

MDDHH	HERM-CEN T-CHLR	HERM-CEN T-CHLR	HERM-CEN T-CHLR	HERM-CEN T-CHLR	COOLING- TWR WATER	TWP	COOLING- TWR	COOLING- TWR	
	LOAD	ELECTRIC USE	ENTERING COND TEM	COLD TEM	WATER FLOWRATE		Fan Blec	PUMP BLEC	
	BTU/HR	BTU/HR	F	P	GAL/MIN	R	BTU/HR	BTU/HR	
	( 1)	(3)	(12)	(13)	( 8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (JAN)								
MIN	0.	0.	0.0	0.0		0.0	0,	٥.	
MX	0.	0.	0.0	0.0 0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	٥.	0.	
ONTHLY	SUMMARY (FEB)								
MN	0.	0.	0.0			0.0	0.	0.	
MX	0.	0.	0.0	0.0 0.0	0.0		0,	0.	
SM	0.	0.	0.0	0.0	0.0		o,	0.	
AV	0.	0.	0.0 0.0	0.0	0.0	0.0	0.	0.	
ONTHLY	SUMMARY (MAR)								
MIN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.			0.0			0.	0.	
SM	0.	0.	0.0	0.0	0.0		0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	o.	0.	
MONTHLY	SUMMARY (APR)								
MIN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0		0.0	0.	o.	
SM	0.	0.	0.0 0.0	0.0	0.0	0.0	0.	o.	
AV	0.	0.		0.0	0.0	0.0	0.	0.	
ONTHLY	SUMMARY (MAY)								
MN	0.	0.	0.0	0.0	0.0	0.0	٥.	0.	
MX		105/932.	76.9	55.8	1950.0	6.9	140410.	90465.	
SM	207910800.	69468808.	16621.7	13621.5	491400.0	305.3	140410. 29105650.	22797268.	
AV	422583.	141197.	33.8	27.7	998.8	0.6	59158.	46336.	
ONTHLY	SUMMARY (JUN)								
MN	294536.	138901.	64.5	53.9	1950.0	0.5	106265. 140410.	90465.	
MX	4273526.	834695.	80.0	55.3	1950.0	5.3	140410.	90465.	
SM	795309120.	202452688.	31423.1	24802.8	889200.1	1060.6	140410. 59769016. 131072.	41252200,	
AV	1744099.	443975.	68.9	54.4	1950.0	2.3	131072.	90465.	
MONTHLY	SUMMARY (JUL)								
MN	329479.	155419.	65.0	53.9	1950.0	0.6	113415.	90465.	
MX	329479. 4229558.	830064.	79.0	55.3	1950.0	5.3	140410.	90465. 90465.	
SM	1073095552.	255829792.	35678.5	27485.1	982800.1	1404.0	68536032.	45594536	
AV	2129158.				1950.0		135984.	90465.	

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 1/1996 11:18:57 PDL RUN 1 READING, 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 RP_1 - HOURLY-REPORT PAGB 2- 1 ------HERM-CEN HERM-CEN HERM-CEN HERM-CEN COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR T-CHLR T-CHLR TWR TWR TWO LOAD BLECTRIC ENTERING LRAVING MATTED RANGE Pan PUMP IISR COND TEM COLD TEM PLOWRATE RLEC BLBC BTU/HR BTU/HR GAL/MIN BTU/HR BTU/HR ----( 1) ----(3) ---- (12) ---- (13) ----(8) ----(10) ---- (20) ---- (21) MONTHLY SUMMARY (AUG) 138901. 64 5 53.9 1950.0 0.5 108054. 90465. MY 4478983. 904651. 82.9 55.4 1950.0 5.6 140410. 90465. SM 865315712 217927440 33142.3 25473.6 912600.1 1149.2 62408340. 42337780. ΑV 1848965. 465657. 70.8 54.4 1950.0 2.5 133351. 90465. MONTHLY SUMMARY (SEP) MN 294536. 138901. 65.0 53.9 1950.0 0.5 106265. 90465. ΜX 3308904. 665170 78.0 55.0 1950.0 4.2 140410. 90465. SM 562664832. 169260320. 32074.6 25362.2 912600.1 789.1 59067972. 42337784. A۷ 1202275. 361667. 68.5 54.2 1950.0 1.7 126214. 90465 MONTHLY SUMMARY (OCT) 0. 2625922. MN 0.0 0.0 0.0 0.0 0. MX 562344. 70.1 54.7 1950.0 3.4 140410. 90465. 115559568. 49308716. 16451.3 13587.5 491400.0 190.0 28136252 22797272. ΑV 229285. 97835. 32.6 27.0 975.0 0.4 55826. 45233 MONTHLY SUMMARY (NOV) ٥. 0. 0.0 0.0 0.0 0.0 ø. Ω MX ٥. ٥. 0.0 0.0 0.0 0.0 0. 0. SM 0. σ. 0.0 0.0 0.0 0.0 0. ΑV ٥. ٥. 0.0 0.0 0.0 0. ٥. MONTHLY SUMMARY (DEC) 0. 0. 0.0 0.0 0.0 α. ٥. ΜX ٥. 0.0 0.0 0.0 0.0 0. 0. SM 0. ٥. 0.0 0.0 0.0 0.0 ٥. ΑV 0. ۵. 0.0 0.0 0.0 ٥. YEARLY SUMMARY MN ο. ٥. 0.0 0.0 0.0 ο. ΜX 5606697. 1057932. 82.9 55.8 130332.7 1950.0 6.9 140410. 90465. SM 3619855616. 964247744. 165391.5 4680000.5 4898.1 307023264. 217116832. AV 631077. 168105. 28.8 22.7 815.9 0.9 53526. 37852.

	ENTECH ENGINE	RERING	EZDOR - EFIL	te software dev	REPODMENT INC	DOR	-2.1D	7/ 1/	1996	11	:18:57	PDL	RUN	1
	DING, PA	19603	4130.05 FT.	MONMOUTH - MYE	R CENTER, NJ	FIMOACO -	SIM MC	A H20	ONLY	W/OA	SCHD1			_
RP_2		LY-REPORT										PAGE	1-	1
MMDDHH	HM-BOILE	HN-BOILE	HW-BOILE	HW-BOILE										
	R	R	R	R										
	LOAD	RLECTRIC	FUBL	CAPACITY										
		USB	USE	RUNNING										
	BTU/HR	BTU/HR	USB BTU/HR	BTU/HR										
	( 1)	(3)	(4)	(7)										
MONTHLY	SUMMARY (JAN)													
MN	47751.	4202.	74911.	4038225.										
MX	3423144. 688620416.	88841.	4218392.	4038225.										
SM	688620416.	38225324.	966023552.	1986806912.										
AV			1963463.		•									
MONTHLY	SUMMARY (FEB)													
MN	13382.	1178	20003	4038225										
MX	4038225.	88841.	20993. 4845870.	4030223.										
SM	594917677	31672012.	915745056											
AV	1317146.	71333.	1837266.	1792971904. 4038225.										
AV	131/140.	/1333.	103/260.	4036225.										
MONTHLY	SUMMARY (MAR)													
MN	13382.	1178.	20993.	4038225.										
MX	2094475.	88841.	2802037. 515275392.	4038225										
SM	342445536.	25682196.	515275392.	1889889536										
AV	731721.	54876.												
MONTHLY	SUMMARY (APR)													
MN	13382.	1178.	20993.	4038225										
MX	1511768.	88841.	20993. 2154608.	4038225. 4038225.										
SM	93022688.		144736848.	1889889536.										
AV	198766.		309267.											
MONTHLY	SUMMARY (MAY)													
MN	0.	0.	0. 279585.	n										
MX	178219.	15683	279585	4038225										
SM	11111955.		17432148.											
AV	22585.	1988.		1969866.										
MONTHIV	SUMMARY (JUN)													
MN	0.	٥.	0.	0.										
MX	0.	0.	o.	0.										
SM	0.	0.	0.	0.										
AV	0.	ŏ.	o.	0.										
MONTHI.Y	Z SUMMARY (JUL)													
MN	0.	0.	0.	٥.										
MX	0.	0.	0.	0.										
SM	0.	0.	0.	0.										
AV	0.	0.	0.	0.										
~~	U.	U.	0.	u.										

REA RP_2	DING, I	FINEERING PA 19603 HOURLY-REPORT	EZDOB - ELI 4130.05 FT.	TE SOFTWARE	DEVELOPMENT INC MYER CENTER, NJ	DOE FTMOACO -	-2.1D SIM MC	7/ 1/1996 A H20 ONL)	5 11:18:5 7 W/OA SCHD1	RUN 1 2- 1
	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE						 
	R	R	R	R						
	LOAD	BLECTRIC	FUEL	CAPACITY						
		USE	USR	RUNNING						
	BTU/HR	BTU/HR	BTU/HR	BTU/HR						
	( 1)	(3)	(4)	( 7)						
MONTHLY	SUMMARY (AU	JG)								
MIN	C	). 0.	0.		0.					
MX	0	0.	0.		0.					
SM	0	0.	0.	1	0.					
AV	O	0.	0.	•	0.					
MONTHLY	SUMMARY (SE	IP)								
MN	0	0.	0.	(	o.					
MX	0	0.	0.	(	o .					
SM	0	). 0.	0.	(	o.					
AV	0	0.	0.	(	o.					
MONTHLY	SUMMARY (OC	T)								
MN	0	0.	0.	(	).					
MX	460250	40502.	722028.	4038229	5.					
SM	16346390	1438483.	25643796.	1017632512	2.					
AV	32433	. 2854.	50881.	2019112	2.					
MONTHLY	SUMMARY (NO	(V)								
MN	13382	1178.	20993.	4038225	5.					
MX	1976723	. 88841. . 18795102.	2672497.	4038225	5.					
SM	237940112	. 18795102.	362754432.	1938348032	<b>!</b> .					
AV	495709	39156.	755738.	4038225	5.					
	SUMMARY (DE					•				
MN	13382		20993.	4038225						
MX	2628322	. 88841.	3381122.	4038225	<b>5.</b>					
SM	591915264		846545600.	1986806912	l <b>.</b>					
AV	1203080	72387.	1720621.	4038226	ī.					
YEARLY :	SUMMARY									
MIN	0	. 0.	0. 4845870.	C	١.					
MX	4038225	. 88841.	4845870.	4038225	i.					
SM	2566215168	. 160345232.								
AV	447388	27954.	644030.	2348591	••					

ENTECH ENGINEERING BZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/1/1996 11:18:57 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- EV-B COST OF FUELS AND UTILITIES

ENERGY SOURCE	ENERGY UNIT (BTU)	UNIFORM COST /UNIT (\$)	COST ESCLA- ATION RATE	MIN MNTHLY CHARGE (\$)	RATE LIMIT /UNIT (\$)	FIXED MNTHLY CHARG1 (\$)	PIXED MNTHLY CHARG2 (\$)	ASSIGN- SCHEDULE (U-NAME)	ASSIGN- CHARGE1 (U-NAME)	ASSIGN- CHARGE2 (U-NAME)
ELECTRIC	3413.00 138690.00	0.0000	5.000		1000000.000	0.00	0.00	ARTEC1		

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

REPORT- ES-D SUMMARY OF FUEL AND UTILITY USE AND COSTS BLECTRIC FUEL-OIL MONTH IINTT= UNIT= 138690.00 3413.00 JAN ENERGY CONSUMPTION (UNIT/MO) 487961. 7925. PEAK DEMAND (UNIT/HR) 1455. 30. 47557.54 4675.68 TOTAL COST (\$) FRB ENERGY CONSUMPTION (UNIT/MO) 439306. 6237. PEAK DEMAND (UNIT/HR) TOTAL COST (\$) 44037.77 3680.07 MAR ENERGY CONSUMPTION (UNIT/MO) 503776. 4040. PRAK DEMAND (UNIT/HR) 1446. 20. TOTAL COST (\$) 48611.83 2383.83 1157. ENERGY CONSUMPTION (UNIT/MO) 469111. PEAK DEMAND (UNIT/HR) 1437. 16. TOTAL COST (\$) 46045.34 682.53 MAY ENERGY CONSUMPTION (UNIT/MO)
PEAK DEMAND (UNIT/HR) 568819. 164. 1914. TOTAL COST (\$) 57299.05 697866 ENERGY CONSUMPTION (UNIT/MO) α. PEAK DEMAND (UNIT/HR) 1981. 0. TOTAL COST (\$) 72316.75 0.00 703851. ENERGY CONSUMPTION (UNIT/MO) 0 PEAK DEMAND (UNIT/HR)
TOTAL COST (\$) 1972. ٥. 72397.58 0.00 AUG 733290. ENERGY CONSUMPTION (UNIT/MO) 0. PEAK DEMAND (UNIT/HR) 1974. 0. TOTAL COST (\$) 75002.72 0.00 ENERGY CONSUMPTION (UNIT/MO) 660800. ٥. PEAK DEMAND (UNIT/HR)
TOTAL COST (\$) 1918. 0. 68798.25 ENERGY CONSUMPTION (UNIT/MO) 539103. 229. PEAK DEMAND (UNIT/HR) 1829. TOTAL COST (\$) 54434.82 135.25 NOV 462145. 2814. ENERGY CONSUMPTION (UNIT/MO) PEAK DEMAND (UNIT/HR) 45628.25 TOTAL COST (\$) 1660.25 DEC ENERGY CONSUMPTION (UNIT/MO) 486706. 6742. PEAK DEMAND (UNIT/HR) 1450. 3978.03 TOTAL COST (\$) 47423.10 TOTAL

6752735.

679553.06

1981.

29309.

35. 17292.41

ENERGY CONSUMPTION (UNIT/YR)

PEAK DEMAND (UNIT/HR)

TOTAL COST (\$)

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11:18:57 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- BS-E SUMMARY OF ELECTRICITY CHARGES

HTMON	ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	Energy Charge (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
AN								
	40FPKKWH	744	487961.	35084.43	1455.	1455.	0.00	
	BONDKDWHTG	252	297777.	0.00	1455.	1455.	12473.11	
								47557.5
ВB								2,00,10
	40FPKKWH	672	439306.	31586.13	1453.	1453.	0.00	
	BONPKDMHTG	228	268484.	0.00	1453.	1453.	12451.63	
AR								44037.7
nut.	40FPKKWH	744	503776.	36221.48	****			
	BONPKDMHTG	276	324761.	36221.48 0.00	1446.	1446.	0.00	
	TOTAL INVITED	2/0	344/01.	0.00	1446.	1446.	12390.35	
PR								48611.8
	40PPKKWH	720	469111.	33729.11	1437.	1437.	0.00	
	BONPKDMHTG	252	296112.	0.00	1437.	1437.	12316.23	
						-13/.	12310.23	46045.3
ΑY								40045.5
	40FPKKWH	744	568819.	40898.05	1914.	1914.	0.00	
	BONPKDMHTG	252	337596.	0.00	1914.	1914.	16400.99	
								57299.09
UN	40PPKKWH		*****					
	BONPKDMCL	456 264	285499.	20527.35	1088.	1088.	0.00	
	BONPKKWH	264	412368. 412368.	0.00 33030.67	1981.	1981.	18758.73	
	DOM: NAME	204	412360.	33030.67	1981.	1981.	0.00	
UL								72316.75
	40FPKKWH	504	323908.	23288.99	1072.	* 1072.	0.00	
	BONDKDWCT	240	379942.	0.00	1972.	1972.	18675.21	
	BONPKKWH	240	379942.	30433.38	1972.	1972.	0.00	
							5.55	72397.58
UG								
	40FPKKWH	468	296469.	21316.14	1095.	1095.	0.00	
	BONDKOMCL	276	436821.	0.00	1974.	1974.	18697.22	
	BONDKKWH	276	436821.	34989.35	1974.	1974.	0.00	
ВP								75002.72
	40FPKKWH	468	280414.	20161.77	1066.	1000		
	BONPKDMCL	252	380386.	0.00	1918.	1066. 1918.	0.00	
	BONPKKWH	252	380386.	30468.90	1918.	1918.	18167.58 0.00	
						1210.	0.00	68798.25
CT								00//0.23
	40FPKKWH	744	539103.	38761.54	1829.	1829.	0.00	
	BONPKDMHTG	240	310190.	0.00	1829.	1829.	15673.28	
ov								54434.82
. v	40PPKKWH	720	462145.	22720 25				
			402143.	33228.25	1447.	1447.	0.00	
	BONPKDMHTG	240	282218.	0.00	1447.	1447.	12400.00	

								CONTINUED	-
MONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)	
DBC									
	40FPKKWH	744	486706.	34994.19	1450.	1450.	0.00		
	BONPKDMHTG	252	297287.	0.00	1450.	1450.	12428.91		
								47423.10	
TOTAL			6752735.	498719.72			180833.25	679553.06	

ECO-3

ENTECH ENGINEERING READING, PA 19 REPORT- PV-A EQUIPMENT SIZES 19603 BZDOE - BLITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 7/ 1/1996

WEATHER FILE- NEWARK, NJ

NUMBER NUMBER

SIZE INSTD

AVAI NUMBER NUMBER SIZE INSTD NUMBER NUMBER NUMBER NUMBER EQUIPMENT SIZE INSTD SIZE INSTD SIZE INSTD STZR THSTD MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL HW-BOILER 4.038 1 1 HERM-CENT-CHLR 7.800 1 1 COOLING-TWR 2.379 4 4

MODEL OAC INGLIERTON W/25% REDUCTION

ON-REAK USAGE

ENTECH E	INGINEERING	EZDOE - ELITE SOFTWARE	DEVELOPMENT INC	DOB-2.1D 7/ 1/1996	11: 5: 6 PDL RUN 1
READING,	PA 19603	4130.05 FT. MONMOUTH -	MYER CENTER, NJ	FTMOACO - SIM MCA H20 ONL	W/OA SCHD1
REPORT- PS-C BQUI	PMENT PART LOAD	OPERATION		WEATHER FILE-	NEWARK, NJ

BOUIPMENT			н	OURS A	r perc	BNT PA	RT LOA	D RAT	10			TOTAL HOURS	ANNUAL LOAD (MBTU)	PALSE LOAD (MBTU)	ELEC USED (MBTU)	THERMAL USED (MBTU)
	0 10	20	30	40	50	60	70	8	0 9	0 1	00 - 110+		(MB10)	(MB10)	(MB10)	(MB1U)
HW-BOILER	3062 3062	568 568	512 512	430 430	294 294	110 110	62 62	36 36	9 9	4	1	5088	2807.1	0.0	180.1	4064.9
HERM-CENT-CHLR	1071 1071	521 521	766 766	463 463	318 318	343 343	166 166	24 24	0	0	0	3672	8780.1	0.0	1989.2	0.0
COOLING-TWR	1226 1226	601 601	570 570	302 302	134 134	112 112	124 124	124 124	116 116	87 87	276 276	3672	10769.3	0.0	813.8	0.0

HOT LOOP CIRCULATION PUMP BLECTRICAL USE = 151.9 MBTU COLD LOOP CIRCULATION PUMP BLECTRICAL USE = 924.7 MBTU

- NOTES TO TABLE

  1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS
  THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
  - 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 1/1996 11: 5: 6
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED

11: 5: 6 PDL RUN 1

SATISFIED WEATHER FILE- NEWARK, NJ

HEATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD -----HW-BOILER 2807.1 ********* -----LOAD SATISFIED 2807.1 100.0 TOTAL LOAD ON PLANT 2807.1 MBTU SUPPLIED COOLING LOADS PCT OF TOTAL LOAD HERM-CENT-CHLR 8780.1 100.0 ---------_______ LOAD SATISFIED
TOTAL LOAD ON PLANT 8780.1 8780.1 100.0 MBTU SUPPLIED ELECTRICAL LOADS PCT OF TOTAL LOAD ...... BLECTRICITY 23047.1 100.0 LOAD SATISFIED 23047.1 100.0 TOTAL LOAD ON PLANT 23047.5

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 85.F

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC D
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO
REPORT- PS-D PLANT LOADS SATISFIED

## SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	2807.1	2807.1	0.000	0.000	0
COOLING LOADS	8780.1	8780.1	0.000	0.000	0
ELECTRICAL LOADS	23047.5	23047.1	0.000	0.000	0

ENTECH ENGINEERING EZDOR - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/1/1996 11: 5: 6 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS

WEATHER FILE- NEWARK, NJ

вопъмвит	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER	SIZE OPER
					(HBIO) ARS	(MB1U) MKS	(MBTU) HRS	(MBTU) HRS
HW-BOILER	0.137	4.038	2 20 3	4.038 5088				
HERM-CENT-CHLR	0.307	7.085	8 18 15	7.800 3672				
COOLING-TWR	0.308	8.543	6 13 15	2.379 14688				

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUBL-OIL
CATEGORY OF USE		
SPACE HEAT	180.11	4064.88
SPACE COOL	2802.93	0.00
HVAC AUX	5283.90	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.25	0.00
VERT TRANS	0.00	0.00
MISC RQUIP	4521.26	0.00
TOTAL	23046.46	4064.88

TOTAL SITE ENERGY 27111.97 MBTU 82.3 KBTU/SQFT-YR GROSS-AREA 82.3 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 73275.33 MBTU 222.4 KBTU/SQFT-YR GROSS-AREA 222.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.8
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/1/1996 11: 5: 6 PDL RUN 1
RRADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1 = HOURLY-REPORT PAGE 1- 1

RP_1	= HOUR	LY-REPORT							PAGE 1- 1
MMDDHH	HERM-CEN T-CHLR LOAD BTU/HR	HERM-CEN T-CHLR ELECTRIC USE BTU/HR	HERM-CEN T-CHLR ENTERING COND TEM F	HERM-CEN T-CHLR LEAVING COLD TEM F	COOLING- TWR WATER FLOWRATE GAL/MIN	COOLING- TWR RANGE R	COOLING- TWR FAN BLBC BTU/HR	COOLING- TWR PUMP BLEC BTU/HR	
	( 1)	( 3)	(12)	(13)	( 8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (JAN)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (FEB)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (MAR)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	٥.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (APR)								
MN	0.	0.	0.0	0.0	0.0	0.0	0.	٥.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (MAY)								
MN	0.	0.					• 0.	0.	
MX	6223559.	1230971.				7.7	140410.	90465.	
SM	399675968.	83401216.				506.1	17523364.	11941428.	
AV	1586016.	330957.	35.5	28.7	1021.4	2.0	69537.	47387.	
	SUMMARY (JUN)								
MN	896833.	378281.		54.1	1950.0	1.4	117254.	90465.	
MX	7082872.	1460502.		56.3	1950.0	8.8	140410.	90465.	
SM	1184410880.	230279856.		14625.9		1471.8	36816312.	23882852.	
AV	4486405	872272.	72.5	55.4	1950.0	5.6	139456.	90465.	
	SUMMARY (JUL)								
MIN	1535604.	433877.				2.1	133925.	90465.	
MX	6885006.	1399159.				8.6		90465.	
SM	1179970176.	226407168.				1461.3		21711684.	
AV	4916543.	943363.	74.1	55.6	1950.0	6.1	140356.	90465.	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/1/1996 11: 5: 6 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

P_1	= HOUR	LY-REPORT							PAGE 2- 1
	HERM-CEN T-CHLR LOAD	HERM-CEN T-CHLR BLECTRIC USE	HERM-CEN T-CHLR ENTERING COND TEM		COOLING- TWR WATER FLOWRATE	COOLING- TWR RANGE	COOLING- TWR FAN BLBC	COOLING- TWR PUMP BLEC	
	BTU/HR	BTU/HR			GAL/MIN			BTU/HR	
	( 1)	(3)	(12)	(13)	( 8)	(10)	(20)	(21)	
MONTHLY	SUMMARY (AUG)								
MN	825230.	372638.	65.0	54.1	1950.0	1.3	125451.	90465.	
MX									
SM	7084853. 1341466752.	260021408.	20505.1	15328.7	538200.1	1664.3	140410. 38699644.	24968436.	
	4860387.			55.5	1950.0	6.0	140216.	90465.	
MONTHLY	SUMMARY (SEP)								
MN	348085.	164218.	64.4	53.9	1950.0	0.6	107434.	90465.	
MX	6108622.	1216208.	82.2	56.0	1950.0	7.6	140410.	90465.	
SM		175526368.		13863.9	491400.0	1088.6	140410. 34247308.	22797268.	
	3437287.						135902.		
MONTHLY	SUMMARY (OCT)								
MN	0.	0.	0.0	0.0	0.0	0.0	0. 140410.	0.	
MX		925952.	71.0	55.6	1950.0	6.2	140410.	90465.	
SM		49286748.	7055.9	5874.4	210600.0	252.7	13638067.	9770260.	
AV		205361.				1.1		40709.	
MONTHLY	SUMMARY (NOV)		0.0						
MN	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.		0.0	0.0	0.0	0.	0.	
AV	0.	0.		0.0	0.0	0.0	0.	0.	
MONTHLY	SUMMARY (DEC)								
MIN	0.	0.	0.0	0.0	0.0	0.0	· 0.	0.	
MX	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
SM	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
AV	0.	0.	0.0	0.0	0.0	0.0	0.	0.	
YEARLY	SUMMARY								
MN				0.0	0.0	0.0	0.	0.	
MX	7084853.	1460502.	85.4	56.3	1950.0	8.8	140410. 174610160.	90465.	
SM	5160248320.	1024922816.	90842.2		2480400.3			115071920.	
AV	1706431.	338930.	30.0					38053.	

			EZDOR - EFI			C DO:	B-2.1D	7/ 1/1996	11: 5:	6 PDL	RUN	1
REA RP 2	DING, PA	19603 LY-REPORT	4130.05 FT.	MONMOUTH - MY	ER CENTER, N	J FTMOACO	- SIM MC	A H20 ONLY	W/OA SCHD1			
RP_2 	- nour			**********						PAGE	1-	1
MDDHH	HW-BOILE	HM-BOILE	HW-BOILE	HW-BOILE								
	R	R	R	R								
	LOAD	BLECTRIC	FUEL	CAPACITY RUNNING								
		ELECTRIC USE	USE	RUNNING								
	BTU/HR	BTU/HR	BTU/HR	BTU/HR								
	( 1)	(3)	( 4)	( 7)	-							
MONTHLY	SUMMARY (JAN)											
MN	13382.	1178.	20993.	4038225.								
MX	2270410.	88841.	2994365. 133078104.	4038225.								
SM	88794392.	6561223.	133078104.	1017632512.								
AV	352359.	26037.	528088.	4038224.								
MONTHLY	SUMMARY (FEB)											
MN	13382.	1178.	20993. 1858722.	4038225.								
MX	1250150.	88841.	1858722.	4038225.								
SM	31503676.	2751152.	49319672.	920715136.								
AV	138174.	12066.	216314.	4038224.								
MONTHLY	SUMMARY (MAR)											
MN	13382.	1178.	20993.	4038225.								
MX	1219736.	88841.	1824115. 45086800.	4038225.								
SM	28890218.	2493562.	45086800.	1114549888.								
AV	104675.											
MONTHLY	SUMMARY (APR)											
MN	13382.	1178.	20993. 1094918.	4038225.								
MX	697945.	61419.	1094918.	4038225. 4038225.								
SM	10010116.	880890.		1017632512.								
AV	39723.	3496.	62316.	4038224.								
MONTHLY	SUMMARY (MAY)											
MN	0.	0.	0. 240572.	0. 4038225.		•						
MX	153350.	13495.	240572.	4038225.								
SM	3387980.	298142.	5314975.	484586912.								
AV	13444.	1183.	21091.	1922964.								
	SUMMARY (JUN)											
MN	0.		0.									
MX	0.											
SM	0.		0.									
AV	0.	0.	0.	0.								
	SUMMARY (JUL)											
MN	0.	0.										
MX	0.											
SM	0.		0.	0.								
AV	0.	0.	0.	0.								

REAL RP_2	ENTECH ENGIN DING, PA = HOU	EERING 19603 RLY-REPORT		E SOFTWARE DEVELOPME MONMOUTH - MYER CENT		7/ 1/1996 A H20 ONLY	11: 5: W/OA SCHD1	6 PDL PAGE	
	R LOAD	USE	HW-BOILE R FUEL USE BTU/HR	HW-BOILE R CAPACITY RUNNING BTU/HR		 	·		 
	·	·	(4)	,					
		•	( 4)	( //					
	SUMMARY (AUG)								
MN	0.		0.	0.					
MX	0.		0.						
SM	0.	0.	0.	0.					
AV	0.	0.	0.	0.					
MONTHLY	SUMMARY (SEP)								
MN	0.	0.	0.	0.					
MX	0.	0.	0.	0.					
SM	0.	0.	0.	0.					
AV	0.	0.	0.	0.					
MONTHLY	SUMMARY (OCT)								
MN	0.		0.	0.					
MX	125740.		197258.	4038225.					
SM	3920211.		6149925	4038225. 533045600.					
AV	16334.	1437.	25625.	2221023.					
MONTHI.V	SUMMARY (NOV)								
MN	13382.	1178.	20993.	4038225.					
MX	876386.	77122	1374852.	4038225.					
SM		1543579.		969173824.					
AV	73086.	6432.	114656.						
MONTHLY	SUMMARY (DEC)								
MN	13382.		20993.	4038225.	_				
MX	1373219	88841	1998314.		•				
SM	56776184.	4891657.	88561568.						
AV	225302.	19411.	351435.	4038224.					
YEARLY	SUMMARY					1			
MN	0.	0.	0.	0.					
MIX		88841	2994365.	4038225					
SM		19765184.							
AV	79637.		122597.	2339606.					
AV	/202/.	6536.	122597.	43396U6.					

RNTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 7/ 1/1996 11: 5: 6 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- EV-B COST OF FUELS AND UTILITIES

UNIFORM COST MIN RATE FIXED FIXED ENERGY ASSIGN-LIMIT /UNIT MNTHLY MNTHLY ASSIGN-ASSIGN-ENERGY COST BSCLA-MNTHLY CHARG1 CHARG2 SCHEDULE CHARGE1 CHARGE2 /UNIT ATION CHARGE SOURCE UNIT

(\$)

(\$)

(\$)

(U-NAME)

(U-NAME)

(U-NAMR)

(\$)

FUEL-OIL 138690.00 0.5900 5.000 0.00 1000000.000 0.00 0.00

RATE

(\$)

(BTU)

-----

	ELECTRIC	FURL-OII
MONTH	UNIT=	
	3413.00	UNIT= 138690.00
Jan		
ENERGY CONSUMPTION (UNIT/MO)	487961.	7925.
PRAK DEMAND (UNIT/HR)	1455.	30.
TOTAL COST (\$)		4675.68
7RB		
ENERGY CONSUMPTION (UNIT/MO)	439306.	6237.
PEAK DEMAND (UNIT/HR)	1453.	35.
TOTAL COST (\$)	44037.77	
MAR	1105/11/	3000.07
	503776.	4040.
ENERGY CONSUMPTION (UNIT/MO) PEAK DEMAND (UNIT/HR)	1446.	20.
TOTAL COST (\$)	48611.83	2383.83
APR	40011.03	2303.03
PAIDDON CONCIMENTON (TRATE/NO)	469111.	1157
ENERGY CONSUMPTION (UNIT/MO) PEAK DEMAND (UNIT/HR)	1437.	1157.
TOTAL COST (\$)	46045.34	16.
MAY	46045.34	682.53
	568819.	
ENERGY CONSUMPTION (UNIT/MO) PEAK DEMAND (UNIT/HR)	308813.	164.
TOTAL COST (\$)	1914. 57299.05	2.
	57299.05	96.77
JUN		_
ENERGY CONSUMPTION (UNIT/MO)	697866.	0.
PEAK DEMAND (UNIT/HR)	1981. 72316.75	0.
TOTAL COST (\$)	72316.75	0.00
TUL		_
ENERGY CONSUMPTION (UNIT/MO) PRAK DEMAND (UNIT/HR)	703851.	0.
122, 121, 121, 121,		0.
TOTAL COST (\$)	72397.58	0.00
AUG		_
ENERGY CONSUMPTION (UNIT/MO)		0.
PRAK DEMAND (UNIT/HR)	1974.	0.
TOTAL COST (\$)	75002.72	0.00
SEP		
ENERGY CONSUMPTION (UNIT/MO)	660800.	0.
PEAR DEMAND (UNIT/BR)	1918.	0.
TOTAL COST (\$)	68798.25	0.00
OCT		
ENERGY CONSUMPTION (UNIT/MO)	539103.	229.
PEAK DEMAND (UNIT/HR)	1829.	5.
TOTAL COST (\$)	54434.82	135.25
NOV		
ENERGY CONSUMPTION (UNIT/MO)	462145.	2814.
PRAK DRMAND (UNIT/HR)	1447.	19.
TOTAL COST (\$)	45628.25	1660.25
DEC		
ENERGY CONSUMPTION (UNIT/MO)		6742.
PEAK DEMAND (UNIT/HR)	1450.	24.
TOTAL COST (\$)	47423.10	3978.03
TOTAL		
ENERGY CONSUMPTION (UNIT/YR)	6752735.	29309.
	1981.	35.
PEAK DEMAND (UNIT/HR) TOTAL COST (\$)	679553.06	

ENTECH ENGINEERING EZDOE - ELITE SOPTWARE DEVELOPMENT INC DOE-2.1D 7/ 1/1996 11: 5: 6 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	energy Charge (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
IAN								
AN	40FPKKWH	744	487961.	35084.43	1455.	1455.	0.00	
	BONDKOMHTG	252	297777.	0.00	1455.	1455.	12473.11	
								47557.54
7BB								
	40FPKKWH	672	439306.	31586.13	1453.	1453.	0.00	
	BONPKDMHTG	228	268484.	0.00	1453.	1453.	12451.63	
								44037.77
iar								
	40PPKKWH	744	503776.	36221.48	1446.	1446.	0.00	
	BONPKDMHTG	276	324761.	0.00	1446.	1446.	12390.35	48611.83
								48011.83
APR	40FPKKWH	720	469111.	33729.11	1437.	1437.	0.00	
	BONPKDMHTG	252	296112.	0.00	1437.	1437.	12316.23	
	BONFADMAIG	232	270222.	0.00	1437.	2437.	12310.43	46045.34
YAY								
	40FPKKWH	744	568819.	40898.05	1914.	1914.	0.00	
	BONPKDMHTG	252	337596.	0.00	1914.	1914.	16400.99	
								57299.0
JUN								
	4OFPKKWH	456	285499.	20527.35	1088.	1088.	0.00	
	BONDKDMCL	264	412368.	0.00	1981.	1981.	18758.73	
	RONDKKMH	264	412368.	33030.67	1981.	1981.	0.00	72316.75
JUL								/2310./-
401	40FPKKWH	504	323908.	23288.99	1072.	1072.	0.00	
	BONPKDMCL	240	379942.	0.00	1972.	. 1972.	18675.21	
	BONPKKWH	240	379942.	30433.38	1972.	1972.	0.00	
								72397.5
AUG								
	40FPKKWH	468	296469.	21316.14	1095.	1095.	0.00	
	BONPKDMCL	276	436821.	0.00	1974.	1974.	18697.22	
	BONDKKMH	276	436821.	34989.35	1974.	1974.	0.00	
								75002.7
SEP	*OBDAMMI	468	280414.	20161.77	1066.	1066.	0.00	
	40FPKKWH BONPKDMCL	468 252	380386.	0.00	1918.	1918.	18167.58	
	BONPKKWH	252	380386.	30468.90	1918.	1918.	0.00	
	DOMERRHII	4.54		551-1.56			• • • • • • • • • • • • • • • • • • • •	68798.2
OCT								
	40FPKKWH	744	539103.	38761.54	1829.	1829.	0.00	
	BONPKDMHTG	240	310190.	0.00	1829.	1829.	15673.28	
								54434.83
NOV			4604.5		1440	1440	2.22	
	4OFPKKWH	720	462145.	33228.25 0.00	1447.	1447. 1447.	0.00 12400.00	
	BONDKDWHTG	240	282218.	0.00	1447.	144/.	12400.00	45628.2

ENTECH ENGINEERING EZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 1/1996 11: 5: 6 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT	LENGTH	CONSUMPTION BY C-A	ENERGY CHARGE	MEASURED DEMAND	BILLING DEMAND	DEMAND CHARGE	TOTAL CHARGES
	(U-NAME)	(HR/MO)	(KMH)	(\$)	(KW)	(KW)	(\$)	(\$)
DBC								
200	40FPKKWH	744	486706.	34994.19	1450.	1450.	0.00	
	BONPKDMHTG	252	297287.	0.00	1450.	1450.	12428.91	
								47423.10
TOTAL			6752735.	498719.72			180833.25	679553.06

ECO-3 Bill 15/10 Hedwell of Croperty

MDDHH	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC LN	
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	
	BLECTRIC	<b>ELECTRIC</b>	BLECTRIC	BLECTRIC	BLECTRIC	
	KW	KW	KW	KW	KW	11/200 1201
	(33)	(33)	(33)	(33)	(33)	Moder BBI Infliternal a Reduction
MONTHLY	SUMMARY (J	AN)				
MN	18.392	7.987	22.948	13.393	50.500	1 . W. TOLON !
MX	18.392	7.987	22.948	13.393	50.500	MACIENTIN
SM	9049.063	3929.703	11290.217	6589.162	24846.000	
ΑV	18.392	7.987	22.948	13.393	50.500	ς ,
						VCOUCDON
MONTHLY	SUMMARY (F	KB)				CPIOCIO
MN	18.392	7.987	22.948	13.393	50.500	·
MX	18.392	7.987	22.948	13.393	50.500	
SM	8166.226	3546.317	10188.731	5946.316	22422.000	•
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (M	AR)				
MIN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	8607.644	3738.010	10739.474	6267.740	23634.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (A	PR)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	8607.644	3738.010	10739.475	6267.739	23634.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (M	AY)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	•
SM	9049.063	3929.703	11290.217	6589.161	24846.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHLY	SUMMARY (J	UN)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	8386.935	3642.164	10464.104	6107.028	23028.000	
AV	18.392	7.987	22.948	13.393	50.500	
	SUMMARY (J					
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	9269.771	4025.550	11565.588	6749.873	25452.000	
ΑV	18.392	7.987	22.948	13.393	50.500	

	ENTECH	ENGINEERING			SOFTWARE DEVE			DOE-2.1D	7/ 2/1996	11:24: 2	SDI.	RUN 1
R	BADING,	PA 196	503 413	0.05 FT. MO	MOUTH - MYER	CENTER, N	U	PTMOBBO-STM (UH&A	HU W/DX) 4CLN	REHTARTOR	124	
SR_1		- HOURLY-REPOR	et.			_			,,			2- 1
						•						
	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC							
	TOT FAN	TOT FAN	MOW 123.34	MOM 7333	LN							
	BLECTRIC		TOT FAN ELECTRIC	TOT FAN ELECTRIC	TOT FAN							
	KW	. REACTRIC	KW	KW	BLECTRIC KW							
	A.	K.H	N.M	XW.	AM							
	(33)	(33)	(33)	(33)	(33)							
MONTH	LY SUMMARY	(AUG)										
MN	18.39	2 7.987	22.948	13.393	50.500							
MX	18.39			13.393	50.500							
SM	8607.64	4 3738.010	10739.474	6267.739	23634.000							
AV	18.39	7.987	22.948	13.393	50.500							
MONTH	LY SUMMARY	(SRP)										
MN			22.948	13.393	50.500							
MX				13.393	50.500							
SM			10739.475	6267.740	23634.000							
AV	18.39			13.393	50.500							
MONTH	LY SUMMARY	(OCT)										
MN			22.948	13.393	50.500							
MX				13.393	50.500							
SM	9269.77		11565.588	6749.873	25452.000							
AV	18.39		22.948	13.393	50.500							
MONTH	LY SUMMARY	(NOV)										
MN			22.948	13.393	50.500							
MX	18.39			13.393	50.500							
SM	8828.35	3833.857	11014.846	6428.450	24240.000							
AV	18.39	2 7.987	22.948	13.393	50.500							
MONTH	LY SUMMARY	(DEC)										
MN	18.39	7.987	22.948	13.393	50.500			•				
MX	18.39	2 7.987	22.948	13.393	50.500			-				
SM	9049.06	2 3929.703	11290.217	6589.162	24846.000							
AV	18.39	2 7.987	22.948	13.393	50.500							
YEARL	SUMMARY											
MIN	18.39	2 7.987	22.948	13.393	50.500							
MX	18.39	2 7.987	22.948	13.393	50.500							
SM	105498.81	.3 45814.586	131627.406	76819.984	289668.000							
AV	18.39	2 7.987	22.948	13.393	50.500							

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/ 2/1996 11:24: 2 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOBBO-STM (UHGAHU W/DX) 4CLN REHT&HTON24
REPORT- PV-A EQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
STM-BOILER	2.939 1 1					
DHW-HEATER	0.000 1 1					
HERM-REC-CHLR	4.552 1 1					

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:24: 2 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UHEAEU W/DX)4CLN REHT&HTON24
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
STM-BOILER	9985.1	
DHW-HEATER	0.0	0.0
	**********	************
LOAD SATISFIED	9985.1	100.0
TOTAL LOAD ON PLANT	9985.1	200.0
TOTAL DOAD ON FIRMS	3303.1	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-REC-CHLR	15871.3	100.0
	**********	*****
LOAD SATISFIED	15871.3	100.0
TOTAL LOAD ON PLANT	15871.3	200.0
TOTAL BOAD ON FEMALE	136/1.3	
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
BLECTRICITY	21900.3	100.0
	38444444	
LOAD SATISFIED	21900.3	100.0
TOTAL LOAD ON PLANT	21900.3	

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	9985.1	9985.1	0.000	0.000	0
COOLING LOADS	15871.3	15871.3	0.000	0.000	0
ELECTRICAL LOADS	21900.3	21900.3	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:24: 2 PDL RUN 1 RRADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UHLAHU W/DX) 4CLN REHTSHTON24 REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

BQUIPMENT	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
STM-BOILER DHW-HRATER	0.388	2.939 0.000		2.939 8760 0.000 0				
HERM-REC-CHLR	0.398	4.552	8 18 16	4.552 8760				

BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:24: 2 F4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 ENTECH ENGINEERING 11:24: 2 PDL RUN 1 READING, PA 19603 REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE METU -	BLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	550.53	15151.64	0.00
SPACE COOL	8734.99	0.00	0.00
HVAC AUX	4964.14	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	3040.82	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	4610.08	0.00	0.00
TOTAL	21900.56	15151.64	0.00

TOTAL SITE ENERGY 37051.90 MBTU 313.2 KBTU/SQFT-YR GROSS-AREA 313.2 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 80918.21 MBTU 684.0 KBTU/SQFT-YR GROSS-AREA 684.0 KBTU/SQFT-YR NET-AREA PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0

PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING RZDOE - BLITE SOFTWARE DEVELOPMENT INC DOR-2.1D 7/ 2/1996 11:24: 2 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 PR_1 - HOURLY-REPORT PAGE 1- 1 HERM-REC HBRM-REC HERM-REC STM-BOIL STM-BOIL MMDDHH -CHLR -CHLR -CHLR LOAD BLECTRIC CONDENSE LOAD RLECTRIC USE FAN ELEC USR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----(18) ----( 1) ----( 1) ----(3) ----(3) MONTHLY SUMMARY (JAN) 415125. MN 691875. 553860. 1228144. 64648. 1006540. 682813. 2701256. 64648. ΜX 1776538. 377932192. 281947008. 936999104. 31806630. SM ΑV 972286. 768155. 573063. 1904470. 64648. MONTHLY SUMMARY (FEB) 379776. 506556. 1132605. 64648. 632960. MN 1413205. 953701. 682813. 2938528. ΜX 64648. 438156896. 346102944. 258160144. 855444544. 28703540. A۷ 986840. 779511. 581442. 1926677. 64648. MONTHLY SUMMARY (MAR) 908338. 727898. 545003. 1020715. 64648. MN ΜX 1901428. 1024457. 682813. 2175210. 64648. 300986720. 795071552. 30255086. SM 517894272. 404728928. 643134. 1698871. ΑV 1106612. 864805. 64648. MONTHLY SUMMARY (APR) 562359. 751731. MN 937265. 751183. 64648. 682813. 2051875. 1059606. ΜX 2109139. 64648. SM 629455552. 438190752. 316353888. 617490240. 30255086. ΑV 1344991. 936305. 675970. 1319424. 64648. MONTHLY SUMMARY (MAY) 1090128. 874349. 654077. 702179. 61792. MX 2899371. 1210732. 682813. 1576256. 501597984. 64648. 485240512. 335833568. 31776204. SM 789316544. 1604302. 986261. 682589. 1019508. 64586. ΑV MONTHLY SUMMARY (JUN) 682813. 1384177. 699064. 61518. MN 949434. ΜX 3163240. 1274939. 682813. 1043111. 64648. 927032768. 482290688. 311362752. 363033088. 29382352. ΑV 2032967. 1057655. 682813. 796125. 64435. MONTHLY SUMMARY (JUL) 1542191. 972581. 682813. 701226 61708. 1275740. 682813. 879275. MX 3262543. 64648. 551956416. 344137792. 380571360. 32485686. 1128647808. SM 1095152. 682813. 755102.

REAI R 1	ENTECH ENGIN DING, PA = HOU	EERING 19603 RLY-REPORT	EZDOB - ELI 4130.05 FT.	TE SOFTWARE DEVI MONMOUTH - MYES	ELOPMENT INC R CENTER, NJ	DOR-2.1D FIMOBBO-SIM (UH&A	7/ 2/1996 HU W/DX)4CLN	REHTEHTON	V24	
			• • • • • • • • • • • • • • • • • • • •						PAGE	2-
	HERM-REC	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL					
	-CHLR	-CHLR	-CHLR	BR	BR.					
	LOAD		CONDENSR	LOAD	BLECTRIC					
			FAN ELEC		USB					
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR					
	( 1)	(3)	(18)	( 1)	( 3)					
MONTHLY	SUMMARY (AUG)									
MN	1432806.	956579.	682813.	653014.	57465.					
MX	3592429.	956579. 1322721.	682813.	1000436.	64648.					
SM	1034400000.	507029920.	319556512.	359288448	30136386.					
AV		1083397.	682813.							
MONTHLY	SUMMARY (SEP)									
MIN			682813.	717531.	63143					
MX										
SM	904879552.	484514816	319556512	1161363. 376723680.	30240636					
AV		1035288.		804965.						
MONTHLY	SUMMARY (OCT)									
MN	1043358.	836645.	626015.	742708.	64648.					
MX	2352478.	1139826.	682813	1579706	64648.					
SM	753210816.	486767168.	343803584.	1579706. 508558848.	32582402.					
AV	1494466.	965808.	682150.	1009045.	64648.					
MONTHLY	SUMMARY (NOV)									
MN	892407.	715077.	535444.	729012.	64153.					
		1100857.	682813.		64648.					
SM	593284160.			661522880.	31030004					
AV		908112.	664981.							
MONTHLY	SUMMARY (DEC)									
MN	739836.	592389.	443902.	913630.	64648.					
MIX	1539367.	972169.	682813.	913630. 2237186.	64648.	•				
SM	512530048.	400700064.	298113696.	860915136.						
AV	1041728.	814431.	605922.							
YEARLY S	SUMMARY									
MN	632960.	506556.	379776.	653014.	57465.					
MX	3592429.	1322721.	682813.	653014. 2938528.	64648					
SM		5401348096.		7217216512.						
AV	1517987.	941658.	653592.							

ECO-3 Bbl rocker of 310 eall

REA	DING,	GINBERING PA 1960 HOURLY-REPORT	3 413		OFTWARE DEVELOPMENT : MOUTH - MYER CENTER,	INC DOB-2.1D 7/ 2/1996 10:10:51 SDL RUN 1 NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24 PAGE 1- 1
MDDHH	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC	
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	
	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	
	KM	KW	KW	KW	KW	
	A.	441	201			1/
,	(33)	(33)	(33)	(33)	(33)	MODEL BBI INFILTERATION W/25, REDUCTION
MONTHLY	SUMMARY (J	AN)				· • •
MN	18.392	7.987	22.948	13.393	50.500	4
MX	18.392	7.987	22.948	13.393	50.500	T 1 11/12 5
SM	4634.884	2012.775	5782.794	3374.935	12726.000	INCITEATION WICE
AV	18.392	7.987	22.948	13.393	50.500	
^1	20,332					<u></u>
MONTHE	SUMMARY (F.	KB)				1/2010
MN	18.392	7.987	22.948	13.393	50.500	& BOUCH I ON
MX	18.392	7.987	22.948	13.393	50.500	
SM	4193.466	1821.082	5232.052	3053.513	11514.000	
AV	18.392	7.987	22.948	13.393	50.500	
AV	10.392	7.367	22.340	13.333	301000	ON-PEAK USAGE
MONTHLY	SUMMARY (M	AR)				111-115AX U2462
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	5076.302	2204.468	6333.536	3696.357	13938.000	
AV	18.392	7.987	22.948	13.393	50.500	
		<b>77</b>				
	Y SUMMARY (A		22.948	13.393	50.500	
MIN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987		3374.935	12726.000	
SM	4634.884	2012.775	5782.794		50.500	
AV	18.392	7.987	22.948	13.393	50.500	
MONTHL	Y SUMMARY (M	IAY)				
MN	18.392	7.987	22.948	13.393	50.500	•
MX	18.392	7.987	22.948	13.393	50.500	
SM	4634.884	2012.775	5782.794	3374.935	12726.000	
AV	18.392	7.987	22.948	13.393	50.500	
MONTER	Y SUMMARY (J	mw)				
MIN	18.392	7.987	22.948	13.393	50.500	
	18.392	7.987	22.948	13.393	50.500	
MX	4855.593	2108.621	6058.165	3535.646	13332.000	
SM AV	18.392	7.987	22.948	13.393	50.500	
AV	18.394	7.967	24.340	1,2,293	20.200	
MONTHL	Y SUMMARY (J	ΠL)				
MN	18.392	7.987	22.948	13.393	50.500	
MX	18.392	7.987	22.948	13.393	50.500	
SM	4414.175	1916.928	5507.423	3214.224	12120.000	
AV	18.392	7.987	22.948	13.393	50.500	

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:10:51 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UHGAHU W/DX)4CLN REHTSHTON24

	OSSTMDX	1SSTMDX	2SSTMDX	3SSTMDX	4SSTMDXC			
		mom	mom	mom na	LN			
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN			
	BLECTRIC	BLECTRIC	ELECTRIC	BLECTRIC	BLECTRIC			
	RW	KW	KW	KW	KW			
	(33)	(33)	(33)	(33)	(33)			
ONTHLY	SUMMARY (A	DG)						
MN	18.392	7.987	22.948	13.393	50.500			
MX	18.392	7.987	22.948	13.393	50.500			
SM	5076.302	2204.468	6333.536	3696.357	13938.000			
ΑV	18.392	7.987	22.948	13.393	50.500			
40NTHLY	SUMMARY (S	EP)						
MN	18.392	7.987	22.948	13.393	50.500			
MX	18.392	7.987	22.948	13.393	50.500			
SM	4634.884	2012.775		3374.935	12726.000			
AV	18.392	7.987	22.948	13.393	50.500			
MONTHLY	SUMMARY (O	CT)						
MN	18.392	7.987	22.948	13.393	50.500			
MX	18.392	7.987	22.948	13.393	50.500			
SM	4414.175	1916.928		3214.224	12120.000			
AV	18.392	7.987	22.948	13.393	50.500			
MONTHLY	SUMMARY (N	OV)						
MN	18.392	7.987	22.948	13.393	50.500			
MEX	18.392	7.987	22.948	13.393	50.500			
SM	4414.175	1916.928		3214.224	12120.000			
AV	18.392	7.987	22.948	13.393	50.500			
MONTHLY	SUMMARY (D	BC)						
MN	18.392	7.987	22,948	13.393	50.500			
MX	18.392	7.987	22.948	13,393	50.500			
SM	4634.884	2012.775	5782.794	3374.935	12726.000			
AV	18.392	7.987	22.948	13.393	50.500			
YEARLY	SUMMARY							
MN	18.392	7.987	22.948	13.393	50.500			
MX	18.392	7.987	22.948	13.393	50.500			
SM	55618.609	24153.299	69393.523	40499.219	152712.000			
ÀΥ	18.392	7.987	22.948	13.393	50.500			

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10:10:51 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- PV-A EQUIPMENT SIZES
WEATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
STM-BOILER	2.939 1 1					
DHW-HEATER	0.000 1 1					
HERM-REC-CHLR	4.552 1 1					

ENTECH ENGINEERING READING, PA 19603 REPORT- PS-D PLANT LOADS SATISFIED

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 10:10:51 FDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBEO-STM(UHGAHU W/DX) 4CLN REHTEHTON24 WEATHER FILE- NEWARK, NJ

HEATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD -----STM-BOILER 9985.1 100.0 DHW-HEATER 0.0 -----LOAD SATISFIED 9985.1 9985.1 LOAD SATISFIED TOTAL LOAD ON PLANT 100.0 COOLING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD . ---HERM-REC-CHLR 15871.3 100.0 -----LOAD SATISFIED 15871.3 100.0 TOTAL LOAD ON PLANT 15871.3 BLECTRICAL LOADS MBTU SUPPLIED PCT OF TOTAL LOAD BLECTRICITY 21900.3 100.0 -----LOAD SATISFIED 21900.3 100.0 TOTAL LOAD ON PLANT 21900.3

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:10:51 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ (CONTINUED)------

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	9985.1	9985.1	0.000	0.000	0
COOLING LOADS	15871.3	15871.3	0.000	0.000	0
BLECTRICAL LOADS	21900.3	21900.3	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:10:51 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UHAAHU W/DX)4CLN REHTAHTON24
REPORT- PS-H EQUIPMENT USE STATISTICS
WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					***********
RQUIPMENT	OPER RATIO	LOAD (MBTU)	DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
STM-BOILER	0.388	2.939	2 20 5	2.939 8760				
DHW-HEATER	0.000	0.000	0 0 0	0.000 0				
HERM-REC-CHLR	0.398	4.552	8 18 16	4.552 8760				

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10:10:51 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOBBO-STM(UH&AHU W/DX)4CLN REHT&HTON24
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USB			
SPACE HEAT	550.53	15151.64	0.00
SPACE COOL	8734.99	0.00	0.00
HVAC AUX	4964.14	0.00	0.00
DOM HOT WIR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	3040.82	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	4610.08	0.00	0.00
TOTAL	21900.56	15151.64	0.00

TOTAL SITE ENERGY 37051.90 MBTU 313.2 KETU/SQFT-YR GROSS-ARRA 313.2 KETU/SQFT-YR NET-ARRA TOTAL SOURCE ENERGY 80918.21 MBTU 684.0 KETU/SQFT-YR GROSS-ARRA 684.0 KETU/SQFT-YR NET-ARRA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 0.0
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

	ENTECH	ENGINE	BERING	EZDOR - ELI	TE SOFTWARE DEV	BLOPMENT INC	DOE-2.1D 7/2/1996 10:10:51 PDL	-
REA	ADING,	PA	19603	4130.05 FT.	MONMOUTH - MYE	R CENTER, NJ	FTMOBBO-STM (UH&AHU W/DX) 4CLN REHT&HTON24	RUN
PR_1		= HOUR	RLY-REPORT				PAGE	1-
MMDDHH	HERM-R	EC	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL		
	-CHLR		-CHLR	-CHLR	ER	ER		
	LOAD		BLECTRIC	CONDENSE	LOAD	ELECTRIC		
			USE	FAN BLEC		USE		
	BTU/HR		BTU/HR	BTU/HR	BTU/HR	BTU/HR		
	(	1)	(3)	(18)	( 1)	(3)		
MONTHLY	SUMMARY	(JAN)						
MN	109	0060.	874295.	654036.	843995.	64648.		
MX	209	2040.	1051559.	682813.	2331893.			
SM	39692	9760.	246212368,	172026960.	373617344.	16291196		
AV		5118.	977033.	682647.	1482609.			
MONTHLY	SUMMARY	(FEB)						
MN	106	6818.	855555.	640091.	879423.	64648.		
MX	213	7164.	1057932.	682813	2028587	64648		
SM	37897	3952.	225648704	155638624	2028587. 310870944.	14779664		
AV	166	2167.	989687.	682626.	1363469.	64648.		
MONTHLY	SUMMARY	(MAR)						
MN				682813	603527	E2110		
MX	259	5265.	1132922	682813	603527. 1882990.	53110.		
SM		3328.	279652096	188456384	323352768.	17740410		
AV			1013232.	682813.	1171568.	64277.		
MONTHLY	SUMMARY	(APR)						
MN			964636	682813	572333.	50765		
MX	308	5316.	1226198	682813	1602004	64649		
SM		6640.	268037312	172068864	1603004. 220453056.	15467520		
AV			1063640.	682813.	874814.	61379.		
MONTHLY	SUMMARY	(MAY)						
MN	166	3845.	990265	682813	565358. 1221351. 177477984.	49752.		
MX	382	8865.	1365767	682813	1721351	43/34.	•	
SM	63448	9920.	283589248	172068864	177477004	14610043		
ΑV	251	7817.	1125354.	682813.	704278.	58016.		
MONTHLY	SUMMARY	(JUN)						
MN	206	0614.	1047111	682813	EE0144	49117.		
MX	434	9201.	1502434	682813. 682813.	558144. 722833.	63609.		
SM	82590	4000.	324826144	180262624	161565600.	14217774.		
AV	312	8424.	1230402.	682813.		53855.		
MONTHLY	SUMMARY	(JUL)						
MN	224	9004.	1077488.	682813	55745°	49055		
MX	416	6256.	1432733	682813	662837	58330		
SM	79741:	1840.	303306304.	163875104	145165008	12774517	•	
AV				682813				
SM	416 79741 332	1040.	1432733. 303306304. 1263776.	682813. 163875104. 682813.	557458. 662837. 145165008. 604854.	58330. 12774517. 53227.		

	entech engin Ding, pa	19603	EZDOE - ELI 4130.05 FT.	TE SOFTWARE DEV MONMOUTH - MYE	ELOPMENT INC R CENTER, NJ	DOR-2.1D 7/2/1 FTMOBBO-STM(UH&AHU W/DX	996 10:10:51 PDL RUN 1
PR_1		KUI-KEPORT					PAGE 2- 1
	HERM-REC	HERM-REC	HERM-REC				
	-CHLR	-CHLR	-CHLR	STM-BOIL ER	STM-BOIL		
	LOAD	ELECTRIC	CONDENSE	LOAD	ER		
	DOND		FAN BLEC	LOAD	BLECTRIC		
	BTU/HR			BTU/HR	USR		
	DIO/ MK	BIO/ AR	BIU/AK	BTU/HR	BTU/HR		
	( 1)	(3)	(18)	( 1)	(3)		
MONTHLY	SUMMARY (AUG)						
MN	2200348.	1066827.	682813.	556143.	49941		
MX	4552086.	1491854.	682813.	684637.	60248		
SM	930409472.	350816256.	188456384.	167303344.	14722696		
AV	3371049.	1271073.	682813.	606172.	53343.		
				***************************************	33343.		
MONTHLY	SUMMARY (SEP)						
MN	1840372.	1015714.	682813.	549405.	48348.		
MX	4068729.	1368927.	682813.	866564	64648		
SM	709604608.	293925536.	172068864.	159246352.	13988820		
AV	2815891.	1166371.	682813.	631930	55511.		
MONTHLY	SUMMARY (OCT)						
MX		986768.		593263.			
MA. SM	3273143.	1241670.	682813.	1187933.	64648.		
AV	349318592.	259346032. 1080609.		168493280.			
AV	228828.	1080609.	682813.	702055.	59178.		
MONTHLY	SUMMARY (NOV)						
MN	1424527.	955364.	682813.	584214.	51411.		
MX	3531256.	1284191.	682813.	1557907	64648		
SM	474993984.	248784352.	163875104.	1557907. 227616032.	15094358		
VA	1979142.	1036601.	682813.	948400.	62893.		
MONTHIT V	SUMMARY (DEC)						
MN	1219525	925111	602012	622168.			
MX	2427751	1098571	554513. 602012	622168.	54751.	•	
SM	419273440	249506752	177060064	1835065. 332685888.	64648.		
AV	1663784	990105.	£000004.	1320182.	16242543.		
•••	2003,54.	250103.	004013.	1320182.	64455.		
	SUMMARY						
MN	1066818.	855555.	640091.	549405.	48348.		
MX	4552086.	1502434.	682813.	2331893.			
SM	7164089344.		2064741632.	2767847424.			
AV	2369077.		682785.				
-					22230.		

ECD-3 testing to get peak

REA RS_1	DING,	GINBERING PA 1960 HOURLY-REPORT	3 413	OR - BLITE SO 0.05 FT. MON			DOB-2 FIMOCA3 - D		996 11:12: & PER HW1E	21 SDL RUN 1 BTUH PAGE 1- 1
MMDDHH	1SDXHT	1SDX	2SDX	3SDX	4SDX	1SHWONLY	04SHWELE V	OSDXHT	OSDXNOHT	
	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	TOT FAN BLECTRIC KW	MOBIL CA3
	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	11100150070
MONTHLY	SUMMARY (J	AN)								_
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	Tilc - 2122
MX	20,202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	INFILTERNO
SM	9939.382	5061.797	10655.630	7269.405	26612.115	0.384	1.919	725.307	1082.203	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	11/250/2
MONTHL	Y SUMMARY (F	BB)								00/25/0
MIN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	0'
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	1/100000 7749
SM	8969.687	4567.963	9616.056	6560.194	24015.811	0.346	1.732	654.545	976.622	(12) 100 (0N
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHL	Y SUMMARY (M	IAR)								00 0
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	()++()=A1
SM	9454.534	4814.880	10135.844	6914.800	25313.963	0.365	1.825	689.926	1029.413	0 11
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	1),, (
MONTHL	Y SUMMARY (A	PR)								JAGE
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MEX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9454.534	4814.880	10135.844	6914.800	25313.963	0.365	1.825	689.926	1029.413	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHL	Y SUMMARY (M	IAY)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	. 0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9939.382	5061.797	10655.630	7269.404	26612.115	0.187	0.936	725.307	1082.203	
VΑ	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	
MONTHL	Y SUMMARY (J									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	9212.109	4691.421	9875.950	6737.497	24664.885	0.000	0.000	672.235	1003.018	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
	Y SUMMARY (J									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	10181.806	5185.255	10915.524	7446.708	27261.189	0.000	0.000	742.997	1108.599	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:12:21 SDL RUN 1
READING, PA 19603 4130.0S FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH

RS_1 = HOURLY-REPORT PAGE 2- 1

(S_1	= :	HOURLY-REPOR	:r							PAGE 2- :
	1SDXHT	1SDX	2SDX	3SDX	4SDX	1SHWONLY	04SHWELE V	OSDXHT	OSDXNOHT	
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	
	BLECTRIC	ELECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	RECTRIC	BLECTRIC	BLECTRIC	
	KW	KW	KW	KW	KW	KW	KW	KW	KW	
	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	
MONTHLY	SUMMARY (A	0G)								
MIN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2,200	
SM	9454.534	4814.880	10135.844	6914.799	25313.963	0.000	0.000	689.926	1029.413	
VA	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MONTHLY	SUMMARY (S	EP)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2,200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	9454.534	4814.880	10135.844	6914.800	25313.961	0.000	0.000	689.926	1029.413	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MONTHLY	SUMMARY (O	CT)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	10181.806	5185.255	10915.524	7446.708	27261.191	0.197	0.983	742.997	1108.598	
ΑV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	
MONTHLY	SUMMARY (N	OV)								
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9696.958	4938.338	10395.737	7092.102	25963.037	0.374	1.872	707.616	1055.808	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHLY	SUMMARY (D	BC)								
MN	20.202	10.288	21.658	14.775	54.090	0.001	. 0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	9939.382	5061.797	10655.631	7269.405	26612.113	0.384	1.919	725.307	1082.203	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
YEARLY	SUMMARY									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
	115878.648		124229.055	84750.625	310258.313	2.602	13.010	8456.014	12616.906	
ΑV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1,474	2.200	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:12:21 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOCA3 - DX COOL W/HN & PER HW -.1BTUH
REPORT- PV-A EQUIPMENT SIZES

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NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER SIZE INSTO SIZE INSTO SIZE INSTO SIZE INSTO SIZE INSTO NUMBER NUMBER NUMBER SIZE INSTD NUMBER (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL (MBTU/H) AVAIL

STM-BOILER 0.579 1 1 DHW-HRATER 0.000 1 1 3.892 1 1 HERM-REC-CHLR

ENTECH ENGINEERING EZDOS - ELITE SOFTWARE DEVELOPMENT INC DOS-2.1D 7/2/1996 11:12:21 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PS-D PLANT LOADS SATISFIED WRATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
STM-BOILER DHW-HEATER	644.6 0.0	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	644.6 644.6	100.0
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-REC-CHLR	16276.7	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	16276.7 16276.7	100.0
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
BLECTRICITY	26094.1	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	26094.1 26094.1	100.0

SUMMARY OF LOADS MET

TYPR OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAR OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	644.6	644.6	0.000	0.000	0
COOLING LOADS	16276.7	16276.7	0.027	0.018	2
ELECTRICAL LOADS	26094.1	26094.1	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 11:12:21 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	37.39	988.18	0.00
SPACE COOL	7908.28	0.00	0.00
HVAC AUX	4941.25	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	4983.86	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	8224.01	0.00	0.00
			*********
TOTAL	26094.79	988.18	0.00

TOTAL SITE ENERGY 27082.28 MBTU 210.8 KBTU/SQFT-YR GROSS-AREA 210.8 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 79348.79 MBTU 617.6 KBTU/SQFT-YR GROSS-AREA 617.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 11.6
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

	ENTECH ENGINE	19603	BZDOR - RL: 4130.05 FT	ITE SOFTWARE :	DEVELOPMENT INC MYER CENTER, NJ	DOE-2.1D FIMOCA3 - DX C	7/ 2/1996 OOL W/HW & PER	11:12:21 PDL RUN HW1BTUH
RP_1		RLY-REPORT						PAGE 1-
MMDDHH	HERM-REC -CHLR	HERM-REC -CHLR	STM-BOIL ER	STM-BOIL ER			*****	
	BLECTRIC USE BTU/HR	CONDENSR		FUEL,				
	USB	FAN KLEC	USE	USE				
	BTU/HR	BTU/HR	BTU/HR	BTU/HR				
	(3)	(18)	( 3)	( 4)				
MONTHLY	SUMMARY (JAN)							
MN	535361.	401088.	1453.	28067.				
MX	876201.	583796.	12738.	752714.				
SM	358254432.	263037744.		171351728.				
AV	728159.	534630.	11813.	348276.				
MONTHLY	SUMMARY (FEB)							
MN	527142.	394952. 583796.	504.	9743.				
MX	875766.	583796.	12738.	9743. 751541.				
SM	327136096.	239127616.	5195205.	159578688.				
AV	736793.	538576.	11701.	359411.				
MONTHLY	SUMMARY (MAR)							
MN	631776.	473001.	504.	9743.				
MX	900159.	583796.	12738.	572733.				
SM	367624640.	266104240.	5025957.	127170360.				
AV	785523.	568599.	10739.	271732.				
MONTHLY	SUMMARY (APR)							
MN	SUMMARY (APR) 661938.	495478.	504.	9743.				
MX	923082.	583796.	12738.	499937.				
SM	382968384.			48507240.				
AV	818309.	579898.	4616.	103648.				
MONTHLY	SUMMARY (MAY) 743947.							
MN	743947.	556541.	0.	0.		•		
MX	975469.	583796.	12738.	767479				
SM	413771104.	287143520.	379107.	7338990.				
AV	840998.	583625.	771.	14917.				
	SUMMARY (JUN)							
MN	798306.	583796.		0.				
MX	1003135.	583796.	0.					
SM		266210880.	0.	0.				
AV	869000.	583796.	0.	0.				
	SUMMARY (JUL)							
MIN	804028.	583796.		0.				
MX	992180.	583796. 583796.	0.	0.				
SM	441250368.	294233088.	0.	0.				
AV	875497.	583796.	0.	0.				

REAI RP_1	ENTECH ENGINE DING, PA = HOUR			TE SOFTWARE DE MONMOUTH - MY	DOE-2.1D FTMOCA3 - DX CO	7/ 2/1996 XXL W/HW & PER	HW1BTUH	
	HERM-REC	HERM-REC	STM-BOIL	STM-BOIL	 			 
	-CHLR	-CHLR	ER ER	ER				
	BLECTRIC	CONDENSE	BLECTRIC	FUEL				
		FAN BLEC	USB	USB				
				BTU/HR				
	(3)	(18)	(3)	( 4)				
MONTHLY	SUMMARY (AUG)							
MIN	788823.	583796.	0.	0.				
MX	991107.		0.	0.				
SM		273216416.	0.	0.				
AV	867043.		0.	0.				
MONTHLY	SUMMARY (SEP)							
MIN		583796.	0.	0.				
MX	948940.		o.	0.				
SM	397793312.		0.	0.				
AV	849986.		0.	ō.				
MONTHLY	SUMMARY (OCT)							
MN		511279.	0.	0.				
MX	907671.		12738.					
SM	415276384	293634560.		12790114.				
AV	823961.		1273.	25377.				
MONTHLY	SUMMARY (NOV)							
MN		468976.	504.	9743.				
MX		583796.	12738.	526275.				
SM	380792512.	274897728.	3636822.	83659400.				
AV		572704.	7577.	174290.				
MONTHLY	SUMMARY (DEC)							
MN	546128.	409124.	504.	9743.				
MX		583796.	12738.	580262.	•			
SM		270221984.		163917632.				
AV	752597.		11507.	333166.				
YEARLY	SUMMARY							
MN	527142.	394952.	0.	0.				
MX	1003135.	583796.	12738.	752714.				
SM	4657185792.	3272436736.	28512548.	774314176.				
AV	811922.	570509.	4971.	134992.				
-							•	

re: .s_1	ADING,	GINBERING PA 1960 HOURLY-REPORT	03 413		OFTWARE DEVE MOUTH - MYER		DOR-2 FIMOCA3 - D	1.1D 7/2/1 X COOL W/HW	996 10:31 & PER HW1	:40 SDL RUN 1 BTUH PAGB 1- 1
MDDHH	1SDXHT	1SDX	2SDX	3SDX	4SDX	1SHWONLY	04SHWELE V	OSDXHT	OSDXNOHT	
	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	TOT FAN	" (
	REFECTATE	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	Mary K
	KW	KW	KW	KW	KW	KW	KW	KW	XW	1 ODDO
	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	(33)	THELTEAT
MONTHL	Y SUMMARY (J	JAN)								MISTERT
MIN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	70.10
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.197	0.983	371.498	554.299	-110-01
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	WI'LS 10
MANAGER S	Y SUMMARY (E	700\								1.1 - 1
MIN	1 SUMMARY (1 20.202	7KB) 10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	<u> </u>
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	VERUUR
SM	4606.056	2345.709	4937.974	3368.748	12332.442	0.178	0.889	336.118	2.200 501.509	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	_
				· <del>-</del>			3.304	4.7/3	2.200	$\alpha$
	Y SUMMARY (N									(1) VICAN
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	<b>O</b> 10
SM	5575.751	2839.543	5977.548	4077.958	14928.747	0.215	1.076	406.879	607.090	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	() Kars
	Y SUMMARY (A									
MN	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.197	0.983	371.498	554.299	
AV	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
MONTHL	Y SUMMARY (N	AAY)								
MN	20.202	10.288	21.658	14.775	54.090	0.000	. 0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.001	0.004	1.474	2.200	
SM	5090.904	2592.626	5457.761	3723.353	13630.595	0.094	0.468	371.498	554.299	
ΑV	20.202	10.288	21.658	14.775	54.090	0.000	0.002	1.474	2.200	
	Y SUMMARY (J									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	5333.328	2716.085	5717.655	3900.655	14279.671	0.000	0.000	389.189	580.694	
ΑV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
	Y SUMMARY (S									
MN	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
MX	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	
SM	4848.480	2469.168	5197.868	3546.050	12981.519	0.000	0.000	353.808	527.904	
AV	20.202	10.288	21.658	14.775	54.090	0.000	0.000	1.474	2.200	

ENTECH ENGINEERING

10.288

21.658

14.775

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 7/2/1996 10:31:40 SDL RUN 1

19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH READING, RS_1 * HOURLY-REPORT PAGE 2- 1 ______ 04SHWRLR 1SDXHT 1 SDX 2SDX 3SDX 4SDX 1SHWONLY OSDXHT OSDXNORT TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN TOT FAN BLECTRIC BLECTRIC BLECTRIC BLECTRIC RLECTRIC BLECTRIC BLECTRIC BLECTRIC BLECTRIC KW KW KN KW KW KW KW KW KW ---- (33) ---- (33) ---- (33) ---- (33) ----(33) ---- (33) ---- (33) ---- (33) ---- (33) MONTHLY SUMMARY (AUG) 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 MX 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2,200 4077.958 14928.747 0.000 5977.548 0.000 607,090 SM 5575.751 2839.543 406.879 21.658 14.775 54.090 0.000 0.000 2.200 ΑV 20.202 10.288 1.474 MONTHLY SUMMARY (SEP) 14.775 0.000 21.658 54.090 0.000 2.200 MN 20.202 10.288 1.474 14.775 54.090 0.000 0.000 21.658 2.200 MX 20.202 10.288 1.474 5457.761 3723.353 13630.595 0.000 0.000 5090.904 2592.626 371.498 554.299 SM 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 MONTHLY SUMMARY (OCT) 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 MN 20.202 10.288 21.658 14.775 54.090 0.001 0.004 MX 20.202 4848.480 2469.168 5197.868 3546.050 12981.519 0.103 0.515 353.808 527.904 ΑV 20.202 10.288 21.658 14.775 54.090 0.000 0.002 1.474 2.200 MONTHLY SUMMARY (NOV) 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 14.775 ΜX 20.202 10.288 21.658 54.090 0.001 0.004 1.474 2.200 3546.050 12981.519 0.187 0.936 5197.868 353.808 527.904 SM 4848,480 2469.168 21.658 0.001 0.004 1.474 ΑV 20.202 10.288 MONTHLY SUMMARY (DEC) 14.775 54.090 0.001 0.004 1.474 2.200 10.288 21.658 MN 20.202 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 MX 5090.904 2592.626 5457.761 3723.353 13630.595 0.197 0.983 371.498 554.299 ΑV 20.202 10.288 21.658 14.775 54.090 0.001 0.004 1.474 2.200 YEARLY SUMMARY 20.202 10.288 21.658 14.775 54.090 0.000 0.000 1.474 2.200 0.001 14.775 54.090 0.004 21.658 1.474 2,200 MX 20.202 10.288 163567.141 65493.133 44680.230 1.367 4457.981 6651.591 31111.520 6.833 SM 61090.844

54.090

0.000

0.002

1.474

2,200

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:31:40 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PV-A BQUIPMENT SIZES WEATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
STM-BOILER	0.579 1 1					
DHW-HEATER	0.000 1 1					
HERM-REC-CHLR	3.892 1 1					

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 10:31:40 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- PS-D PLANT LOADS SATISFIED WRATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
		***************************************
STM-BOILER	644.6	100.0
DHW-HEATER	0.0	0.0
	***********	22222222222222
LOAD SATISFIED	644.6	100.0
TOTAL LOAD ON PLANT	644.6	
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-REC-CHLR	16276.7	100.0
	***********	**********
LOAD SATISFIED	16276.7	100.0
TOTAL LOAD ON PLANT	16276.7	
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
BLECTRICITY	26094.1	100.0
	*********	**********
LOAD SATISFIED	26094.1	100.0
TOTAL LOAD ON PLANT	26094.1	

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	644.6	644.6	0.000	0.000	o
COOLING LOADS	16276.7	16276.7	0.027	0.018	2
ELECTRICAL LOADS	26094.1	26094.1	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 10:31:40 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOCA3 - DX COOL W/HW & PER HW -.1BTUH
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUEL-OIL	NATURAL-GAS
CATEGORY OF USE			
SPACE HEAT	37.39	988.18	0.00
SPACE COOL	7908.28	0.00	0.00
HVAC AUX	4941.25	0.00	0.00
DOM HOT WTR	0.00	0.00	0.00
AUX SOLAR	0.00	0.00	0.00
LIGHTS	4983.86	0.00	0.00
VERT TRANS	0.00	0.00	0.00
MISC EQUIP	8224.01	0.00	0.00
TOTAL	26094.79	988.18	0.00
20270	20024.73	300.10	0.50

TOTAL SITE ENERGY 27082.28 MBTU 210.8 KBTU/SQFT-YR GROSS-ARRA 210.8 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 79348.79 MBTU 617.6 KBTU/SQFT-YR GROSS-ARRA 617.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 11.6
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE BLECTRICITY AND/OR FUEL USED TO GENERATE BLECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

	ENTECH ENGINE	19603		ITE SOFTWARE . MONMOUTH -							
RP_1		LY-REPORT							PAGE	1-	1
MMDDHH	HERM-REC -CHLR BLECTRIC USB BTU/HR	HERM-REC -CHLR CONDENSR FAN ELEC BTU/HR	STM-BOIL ER ELECTRIC USE BTU/HR	STM-BOIL ER FUEL USE BTU/HR							
		(10)	( 3)	( 4)							
	SUMMARY (JAN)										
MN		583796.									
MX	1082899.										
SM	256205232.										
AV	1016687.	583796.	8321.	235995.							
MONTHIT.V	SUMMARY (FEB)					•					
MN	928071.	583796.	504.	9743.							
MX	1088467.	583796.	12738.								
SM		133105368.									
AV		583796.	6952.	154663.							
•••											
MONTHLY	SUMMARY (MAR)										
MN	957016.	583796.	504.	9743.							
MIX	1122546.	583796.	12738.	512098.							
SM	287182592.										
AV	1040517.	583796.	5546.	128695.							
MONTHER	SUMMARY (APR)										
MN	966029	583796.	504	9743.							
MX	1183155.			355173.							
SM	268408896.		477441.	9757922.							
AV	1065115.		1895.	38722.							
	SUMMARY (MAY)										
MN		583796.									
MX	1238328.	583796.	4407.								
SM	275527424.		78084.	1508007.							
AV	1093363.	583796.	310.	5984.							
MONTHLY	SUMMARY (JUN)										
MN	1016320.	583796.	0.	0.							
MX	1304448.	583796.	0.	0.							
SM	298948832.	154122016.	0.	0.							
AV	1132382.	583796.	0.	0.							
MONTHI.V	SUMMARY (JUL)										
MN		583796.	0.	0.							
MX	1258694.		0.	0.							
SM	274606400.		0.	0.							
AV	1144193.	583795.	٥.	o.							

REA RP_1			RZDOE - RLI 4130.05 FT	. MONMOUTH - N	DEVELOPMENT INC MYER CENTER, NJ	DOE-2.1D FTMOCA3 - DX C	7/ 2/1996 OOL W/HW & PER	HW1BTUH	PDL I	
	HERM-REC	HBRM-REC	STM-BOIL	STM-BOIL						
	-CHLR	-CHLR	BR.	BR						
	BLECTRIC	CONDENSE	BLECTRIC	FUEL						
	USE	FAN BLEC	USE	USE						
	BTU/HR	BTU/HR	BTU/HR	BTU/HR						
	( 3)	(18)	( 3)	( 4)						
MONTHLY	SUMMARY (AUG)									
MIN		583796.	0.	0.						
MIX	1280765. 315750784.	583796.	0.	0.						
SM	315750784.	161127568.	0.	0.						
AV	1144025.	583796.	0.	0.						
MONTHLY	SUMMARY (SEP)									
MN	993271.		0.	0.						
MX	1207949.	583796.	0.	0.						
SM	276855072.	147116464.	0.	0.						
AV	1098631.	583796.	٥.	٥.						
MONTHLY	SUMMARY (OCT)									
MN	975607.	583796.	0.	0.						
MIX	1167410.	583796.	8246.	159243.						
SM	255514720.	140110912.	124763.	2409484.						
AV	1064645.	583795.	520.	10040.						
MONTHLY	SUMMARY (NOV)									
MN	963000.	583796.		9743.						
MX	1164715.	583796.	12738.	428717.						
SM	250589440.	140110912.	926197.	19805388.						
VA	1044123.	583795.	3859.	82522.						
MONTHLY	SUMMARY (DEC)									
MN	945033.	583796.	504. 12738.	9743.						
MX	1107379.	583796.	12738.	563442.		•				
SM	257862176.	147116464.	2059144.	50143764.						
AV	1023263.	583796.	8171.	198983.						
YRARLY	SUMMARY									
MN	928071.	583796.	0. 12738.	0.						
MX	1304448.			743884.						
SM	3251125248.		8878254.	213878272.						
AV	1075108.	583795.	2936.	70727.						

Eco-8

ENTECH ENGINEERING BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/17/1996 22:49: 3 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

воптымвит	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) ERS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
HW-BOILER	0.147	4.712	2 20 3	4.712 5088				
HERM-CENT-CHLR	0.307	7.282	8 18 15	7.800 3672				
COOLING-TWR	0.306	8.784	8 18 15	2.400 14688				

Tause FAN ON-PEAK USAGE ENTECH ENGINEERING EZDOB - ELITE SOFTMARE DEVELOPMENT INC DOE-2.1D 6/17/1996 22:49: 3 FDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- BBFS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU ~	ELECTRICITY	FUEL-OIL
CATEGORY OF USE		
SPACE HEAT	229.01	5128.55
SPACE COOL	2659.66	0.00
HVAC AUX	5352.53	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.61	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.42	0.00
moma -		
TOTAL	23021.24	5128.55

28149.62 MBTU 85.4 KBTU/SQFT-YR GROSS-AREA 85.4 KBTU/SQFT-YR NBT-AREA 74261.00 MBTU 225.4 KBTU/SQFT-YR GROSS-AREA 225.4 KBTU/SQFT-YR NBT-AREA TOTAL SITE ENERGY

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE RESCURICITY AND/OR FUEL USED TO GENERATE SELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

REAL	ENTECH ENGINE	SERING 19603	EZDOR - EL:	ITE SOFTWARE	DEVELOPMENT INC	DOE	3-2.1D	6/17/1996	22:49:	B PDL	RUN 1
RP_1	= HOUR	RLY-REPORT									1- 1
MMDDHH	HERM-CEN	HERM-CEN	COOLING-	COOLING-		• • • • • • • • • • • • • • • • • • • •					
	T-CHLR	T-CHLR	TWR	TWR							
	LOAD	BLECTRIC	FAN	PUMP							
		USE	BLEC	BLEC							
	BTU/HR	BTU/HR	BTU/HR	BTU/HR							
	( 1)	(3)	(20)	(21)							
MONTHLY	SUMMARY (MAY)										
MIN		142762.		90465.							
MX	6348487.	1258375. 81835792.	141426.								
SM			12712080.	11941428.							
AV	2970024.	619968.	96304.	90465.							
MONTHLY	SUMMARY (JUN)										
MN	830509.										
MX	7271629.	1507925.	141426.	90465.							
	1194551552.										
AV	4524817.	879734.	134585.	90465.							
MONTHLY	SUMMARY (JUL)										
MN	1498392.	430245.	94161. 141426.	90465.							
MX	7050099.	1439141.		90465.							
SM		228490976.	33845808.								
AV	4964981.	952046.	141024.	90465.							
	SUMMARY (AUG)										
MN	815628.	371830.	32452.	90465.							
MX	7281769.	1502584.	141426.	90465.							
SM			38635008.								
AV	4907798.	951068.	139982.	90465.							
MONTHLY	SUMMARY (SEP)										
MN	355402.	167667.	15417.			-					
MX	6235474.										
SM		175046640.									
AV	3427949.	694630.	111935.	90465.							
MONTHLY	SUMMARY (OCT)										
MN	357490.	168654.	15424.	90465.							
MX	5014499.	925695.									
SM	179807184.	47662560.	6271389.	9770260.							
AV	1664881.	441320.	58068.	90465.					,		
YEARLY	SUMMARY										
	302722.		15251.	90465.							
MX	7281769.	1507925.	141426.	90465.							
SM	5176392704.	1027780480.	155202192.	115071920.							
AV	4069491.	808004.	122014.	90465.							

ENTECH ENGINEERING READING, PA 19603 REPORT- PV-A EQUIPMENT SIZES EZDOE - ELITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 6/17/1996 21:21:25 PDL RUN 1

WEATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
HW-BOILER	4.712 1 1					
HERM-CENT-CHLR	7.800 1 1					
COOLING-TWR	2.400 4 4		•		1.	5

Touse FAN OFF-PENK USME

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/17/1996 21:21:25
4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING 21:21:25 PDL RUN 1 READING, PA 19603 4130
REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ

EQUIPMENT	HOURS AT PERCENT PART LOAD RATIO										TOTAL HOURS	ANNUAL LOAD	PALSE LOAD	BLEC USED	THERMAL USED	
	0 10	20	30	40	50	60	70	8	0 9	0 10	00 - 110+		(MBTU)	(MBTU)	(MBTU)	(MBTU)
HW-BOILER	2851 2851	617 617	617 617	459 459	307 307	134 134	57 57	32 32	9 9	4	1	5088	3532.8	0.0	229.0	5128.5
HERM-CENT-CHLR	1092 1092	504 504	749 749	469 469	313 313	339 339	170 170	36 36	0 0	0	0	3672	8802.2	0.0	1986.8	0.0
COOLING-TWR	1170 1170	657 657	551 551	317 317	141 141	109 109	119 119	125 125	111 111	87 87	285 285	3672	10789.1	0.0	672.8	0.0

HOT LOOP CIRCULATION PUMP ELECTRICAL USE = 177.2 MBTU
COLD LOOP CIRCULATION PUMP ELECTRICAL USE = 950.4 MBTU

- NOTES TO TABLE
  1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/17/1996 21:21:25 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ

HEATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HW-BOILER	3532.8	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	3532.8 3532.8	100.0
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-CENT-CHLR	8802.2	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	8802.2 8802.2	100.0
ELECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
RECTRICITY	23021.1	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	23021.1 23020.8	100.0

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 86.F

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/17/1996 21:21:25 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ 

## SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (METU)	TOTAL OVERLOAD (METU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3532.8	3532.8	0.000	0.000	0
COOLING LOADS	8802.2	8802.2	0.000	0.000	0
BLECTRICAL LOADS	23020.8	23021.1	0.000	0.000	0

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/17/1996 21:21:25 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					
BQUIPMBNT	OPER RATIO	LOAD (MBTU)	DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
HW-BOILER	0.147	4.712	2 20 3	4.712 5088				
HERM-CENT-CHLR	0.307	7.282	8 18 15	7.800 3672				
COOLING-TWR	0.306	8.784	8 18 15	2.400 14688				

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/17/1996 21:21:25 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	BLECTRICITY	FUBL-OIL		
CATEGORY OF USE				
SPACE HEAT	229.01	5128.55		
SPACE COOL	2659.66	0.00		
HVAC AUX	5352.53	0.00		
DOM HOT WTR	0.00	0.00		
AUX SOLAR	0.00	0.00		
LIGHTS	10258.61	0.00		
VERT TRANS	0.00	0.00		
MISC BQUIP	4521.42	0.00		
TOTAL	23021.24	5128.55		

TOTAL SITE ENERGY 28149.62 MBTU 85.4 KBTU/SQFT-YR GROSS-AREA 85.4 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 74261.00 MBTU 225.4 KBTU/SQFT-YR GROSS-AREA 225.4 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

READ					DEVELOPMENT INC TYER CENTER, NJ	DOB-			RUN 1
MMDDHH	HERM-CEN	HBRM-CEN	COOLING~	COOLING-					
	T-CHLR	T-CHLR	TWR	TWR					
	LOAD	BLECTRIC	FAN	PUMP					
		USE	RLEC	RLEC					
	BTU/HR	BTU/HR	BTU/HR	BTU/HR					
	( 1)	(3)	(20)	(21)					
MONTHLY	SUMMARY (MAY)								
MN	302722.	142762.	15251.	90465.					
MX	5349443. 200589872.	1003505.	141426.	90465.					
SM	200589872.	67524968.	8439609.	22797268.					
AV	795992.	267956.	33491.	90465.					
MONTHLY	SUMMARY (JUN)								
MIN	302722.		15251. 141426.	90465. 90465.					
MIX									
	799004608.								
AV	1752203.	442576.	90048.	90465.					
	SUMMARY (JUL)								
MIN	302722.	142762.	16165.	90465.					
MX	4323691.	845941.	141426.	90465.					
SM	1085108224.	256985568.	55622060.	45594536.					
AV	2152993.	509892.	110361.	90465.					
	SUMMARY (AUG)								
MN	302722.	142762.	15419. 141426.	90465.					
MX		923552.	141426.	90465.					
SM	870181440.	218158096.	44604648.	42337780.					
AV	1859362.	466150.	95309.	90465.					
MONTHLY	SUMMARY (SEP)					•			
MN	302722.	142762.	15251. 141426. 29791260.	90465.					
MX	3330085.	669181.	141426.	90465.					
SM		166953456.	29791260.						
AV	1194205.	356738.	63657.	90465.					
	SUMMARY (OCT)								
MN	302722.	142762.	15251.	90465.					
MX			141426.						
	112066016.								
AV	444706.	189044.	23242.	90465.					
	SUMMARY								
MN	302722.	142762.	15251. 141426.	90465.					
MIX									
	3625837824.		185376272.						
AV -	1510766.	399615.	77240.	90465.					

ENTECH ENGINEERING 19603 READING, PA

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

2: 7:39 PDL RUN 1

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/18/1996 2: 7:39
4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1

REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE

WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE METU - BLECTRICITY FUEL-OIL CATEGORY OF USE 229.01 SPACE HEAT 5128.55 SPACE COOL 2803.02 0.00 HVAC AUX 5352.51 0.00 DOM HOT WTR 0.00 0.00 AUX SOLAR 0.00 0.00 10258.58 T.TGHTS 0.00 VERT TRANS 0.00 MISC BOUIP 4521.41 0.00 TOTAL 23164.53 5128.55 Hovery SINGUE SPEED RESULTS

TOTAL SITE ENERGY TOTAL SOURCE ENERGY

28292.98 MBTU 74691.53 MBTU

85.9 KBTU/SQFT-YR GROSS-AREA 226.7 KBTU/SQFT-YR GROSS-AREA

85.9 KBTU/SQFT-YR NET-AREA 226.7 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7

PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/18/1996 2: 7:39 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1	= HOURI	LY-REPORT							PAGE 1-
MMDDHH	HERM-CEN T-CHLR LOAD	HERM-CEN T-CHLR ELECTRIC USE	COOLING- TWR LOAD	COOLING- TWR SIZES RUNNING	COOLING- TWR MINIMUM CBLL NO.	COOLING- TWR TOWER TEMP	COOLING- TWR FAN BLEC	COOLING- TWR PUMP BLEC	COOLING- TWR FRAC HR FANS RUN
	BTU/HR	BTU/HR	BTU/HR			F	BTU/HR	BTU/HR	FRAC.OR
	( 1)	(3)	( 1)	( 6)	(9)	(19)	(20)	(2*)	MULT.
525 1	618332.	292245.	910577.		4.	65.0	113321.	(21)	(23)
525 I	411510.	194213.	605723.		4.	65.0	109160.	90465.	0.8013
525 2	437646.	206585.	644231.		4.	65.0		90465.	0.7718
			676205.		4.		109710.	90465.	0.7757
525 4	459344.	216860.				65.0	110161.	90465.	0.7789
525 5	431755.	203796.	635551.			65.0	109586.	90465.	0.7749
525 6	631318.	298410.	929728.			65.0	113568.	90465.	0.8030
525 7	1706845.	450241.	2157086.		4.	65.0	126525.	90465.	0.8946
525 8	2762013.	567236.	3329249.		4.	65.0	134911.	90465.	0.9539
525 9	3854814.	716778.	4571592.		4.	65.0	141038.	90465.	0.9973
52510	4301003.	786343.	5087345.		4.	65.1	141426.	90465.	1.0000
52511	4666796.	847285.	5514080.		4.	65.8	141426.	90465.	1.0000
52512	4869973.	884564.	5754538.		4.	66.3	141426.	90465.	1.0000
52513	5409071.	984728.	6393799.		4.	68.6	141426.	90465.	1.0000
52514	4793663.	879746.	5673409.	4.	4.	67.3	141426.	90465.	1.0000
52515	4132488.	765379.	4897868.	4.	4.	64.7	141426.	90465.	1.0000
52516	3212557.	624823.	3837380.	4.	4.	65.0	139695.	90465.	0.9878
52517	2672214.	556242.	3228457.	4.	4.	65.0	138876.	90465.	0.9820
52518	2226339.	504528.	2730867.	4.	4.	65.0	138668.	90465.	0.9805
52519	1382371.	419556.	1801927.	4.	4.	65.0	132897.	90465.	0.9397
52520	1186833.	402250.	1589082.	4.	4.	65.0	131311.	90465.	0.9285
52521	1013197.	387625.	1400821.	4.	4.	65.0	126306.	90465.	0.8931
52522	848518.	374397.	1222915.	4.	4.	65.0	124635.	90465.	0.8813
52523	762992.	360986.	1123978.	4.	4.	65.0	123661.	90465.	0.8744
52524	654281.	309315.	963596.	4.	4.	65.0	114002.	90465.	0.8061
DAILY S	SUMMARY (MAY 25)								
MN	411510.	194213.	605723.	4.	4.	64.7	109160.	90465.	0.7718
MX	5409071.	984728.	6393799.	4.	4.	68.6	141426.	90465.	1.0000
SM	53445864.	12234129.	65680004.	96.	96.	1567.8	3086590.	2171169.	21.8247
AV	2226911.	509755.	2736667.	4.	4.	65.3	128608.	90465.	0.9094

ENTECH ENGINEERING READING, PA = HOURLY-REPORT EZDOE - ELITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOR-2.1D 6/18/1996

2: 7:39 PDL RUN 1

RP_1 PAGE 2- 1 -----HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR BLECTRIC LOAD SIZES MINIMUM TOWER FRAC HR PUMP USE RUNNING CELL NO. TEMP RLEC BLBC FANS RUN BTTI/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ---(3) ----( 1) ----(-6) --~(9) ----(19) ---- (20) ---- (21) ---- (23) 526 1 624341. 295098. 919438. 4. 65.0 4. 113436. 90465. 0.8021 526 2 578325. 273260. 851585. 4. 4. 65.0 112549. 526 3 470532. 222160. 692692. 4. 4. 65.0 110392. 90465. 0.7806 201711. 629063. 526 4 427352. 4. 4. 65.0 109494. 90465. 0.7742 526 5 436795. 206182. 642977. 65.0 109692. 4. 4. 90465. 0.7756 526 6 838944. 373647. 1212591. 4. 65.0 124535. 90465. 0.8806 526 7 3627962. 683317. 4311280. 68.7 141426. 90465. 1.0000 526 8 4515940. 832542. 5348482. 4. 72.3 141426. 90465. 1.0000 4959050. 925133. 5884183. 74.5 526 9 4. 4. 141426 90465. 1.0000 52610 5139727. 970342. 6110069. 4. 4. 75.6 141426. 90465. 1.0000 52611 5441774. 1035158. 6476932. 4. 76.8 141426. 90465. 1.0000 52612 5838525. 1124508. 6963033. 4. 4. 78.2 141426. 90465. 1.0000 52613 6225351. 1218847. 7444198. 4. 4. 79.6 141426. 90465. 1.0000 7606862. 52614 6348487. 1258375. 4. 4. 79.8 141426. 90465 1,0000 52615 6132609. 1211687. 7344296. 4. 4. 80.3 141426. 1,0000 90465. 52616 5372993. 1054609. 6427603. 79.1 141426. 90465. 1.0000 965807. 52617 4961285. 5927092. 4. 4. 77.7 141426. 90465. 1.0000 1.0000 52618 4347851. 846228. 5194078. 4. 4. 76.9 141426. 90465 745937. 4507880. 52619 3761942. 4. 4. 76.2 141426. 90465. 1.0000 681606. 4036701. 4. 52620 3355095. 140809. 90465. 0.9956 52621 3099357. 644638. 3743995. 4. 4. 75.0 140207. 90465. 0.9914 90465. 52622 3000988. 627077. 3628066. 4. 4. 75.0 139680 0.9877 583710. 2668355. 3252065. 4. 4. 74.0 52623 138604. 90465. 0.9800 560278. 3068822. 137656. 90465. 0.9733 DAILY SUMMARY (MAY 26) 201711. 629063. MN 427352. 4. 65.0 109494. 0.7742 90465. ΜX 6348487. 1258375. 7606862. 80.3 90465. 1.0000 SM 84682128. 17541858. 102223976. 96. 96. 1759.9 3215597. 2171169. 22.7369 73.3 AV 3528422. 730911. 4259333. 4. 4. 133983. 90465 0.9474 MONTHLY SUMMARY (MAY) 605723. 4. 4. MN 411510. 194213. 4. 64.7 109160. 90465. 0.7718 ΜX 6348487. 1258375. 7606862. 4. 80.3 141426. 90465 1 0000 29775988. 167903984. 3327.7 SM 138128000. 192. 6302187. 4342338. 44.5616 ΑV 2877667. 620333. 3498000. 4. 4. 69.3 131296. 90465.

ENTECH ENGINEERING READING, 19603

SM

AV

106068112.

4419505.

21846556.

910273.

127914696.

5329779.

96.

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96.

4.

1872.8

78.0

3347633.

139485.

2171169.

90465

23.6705

0.9863

EZDOB - BLITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 6/18/1996 2: 7:39 PDL RUN 1

RP_1 - HOURLY-REPORT PAGE 3- 1 -----HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD SIZES MINIMUM TOWER FAN PUMP FRAC HR USE RUNNING CELL NO. TEMP RLEC BLEC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR MULT. ----(1) ----(3) ----( 1) ----(6) ----(9) ---- (19) ----(20) ---- (21) ---- (23) 613 1 1978521. 499272. 2477793. 4. 74.0 4. 134203. 90465. 0.9489 613 2 1961302. 497405. 2458708. 4. 74.0 134081. 90465. 0.9481 613 3 1876837. 488353. 2365190. 4. 4. 74.0 133470. 90465. 0.9437 1812907. 613 4 481616. 2294523. 4. 4. 74.0 132996. 90465. 0.9404 613 5 1836007. 484039. 2320046. 75.0 132231. 4. 4. 90465. 0.9350 613 6 2841241. 605906. 3447147. 75.0 138819. 90465. 0.9816 613 7 4415719. 842722. 5258441. 77.0 141426. 90465. 1.0000 613 8 5238986. 1004274. 6243259. 4. 4. 78.9 141426. 90465. 1.0000 613 9 5833208. 1139176. 6972384. 4. 80.6 4. 141426 90465 1.0000 61310 6349579. 1267680. 7617259. 4. 4. 82.2 141426. 90465. 1,0000 61311 6600368. 1341880. 7942248. 141426. 90465. 1.0000 61312 7022062. 1448864. 8470926. 4. 4. 84.0 141426. 90465. 1.0000 61313 6994234. 1458491. 8452724. 4. 4. 82.4 141426. 90465. 1.0000 61314 7271629. 1507925. 8779554. 4. 4. 83.6 141426. 90465. 1.0000 61315 1287850. 7598160. 6310310. 4. 4. 79.0 141426. 90465. 1.0000 61316 5762688. 1125281. 6887969. 78.1 141426. 90465. 1.0000 90465. 61317 5415416. 1047087. 6462502. 4. 4. 80.0 141426. 1.0000 61318 4953252. 970333. 5923585. 4. 4. 78.5 141426. 90465 1.0000 61319 4347997. 851085. 5199081. 4. 77.7 4. 141426. 90465. 1.0000 61320 3921492. 775505. 4696997. 77.2 141426. 90465. 1.0000 61321 3655017. 731102. 4386119. 4. 4. 76.9 141426. 90465. 1.0000 61322 3392706. 690490. 4083196. 4. 4. 76.0 141003. 90465. 0.9970 61323 3221664. 661677. 4. 3883340. 76.0 4. 140147. 90465. 0.9910 61324 3054979. 638549. 3693528. 90465. 0.9849 DAILY SUMMARY (JUN 13) 2294523. 1812907. 481616. 4. 74.0 132231. 90465. 0.9350 ΜX 7271629. 1507925. 8779554. 84.0 141426. 90465. 1.0000

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/18/1996 2: 7:39 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
PB 1 - HOURLY-PEROPET PAGE 4- 1

P_1	= HOUR	LY-REPORT							PAGE 4-
	HERM-CEN	HERM-CEN	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-
	T-CHLR	T-CHLR	TWR	TWR	TWR	TWR	TWR	TWR	TWR
	LOAD	ELECTRIC	LOAD	SIZES	MINIMUM	TOWER	Pan	PUMP	FRAC HR
		USE		RUNNING	CELL NO.	TEMP	BLBC	BLEC	FANS RUN
	BTU/HR	BTU/HR	BTU/HR			P	BTU/HR	BTU/HR	FRAC.OR
									MULT.
	( 1)	(3)	( 1)	(6)	(9)	(19)	(20)	(21)	(23)
614 1	2812733.	606183.	3418916.	4.	4.	76.0	137946.	90465.	0.9754
614 2	2660563.	586604.	3247167.	4.	4.	75.0	137811.	90465.	0.9744
614 3	2611037.	576516.	3187552.	4.	4.	76.0	136729.	90465.	0.9668
614 4	2477601.	563827.	3041428.	4.	4.	76.0	135914.	90465.	0.9610
614 5	2410466.	555678.	2966144.	4.	4.	76.0	135480.	90465.	0.9580
614 6	3401448.	687409.	4088857.	4.	4.	77.0	140390.	90465.	0.9927
614 7	4922452.	944387.	5866839.	4.	4.	79.3	141426.	90465.	1.0000
614 8	5780206.	1130959.	6911166.	4.	4.	81.3	141426.	90465.	1.0000
614 9	5858298.	1165021.	7023318.	4.	4.	79.9	141426.	90465.	1.0000
61410	6107864.	1206654.	7314518.	4.	4.	80.2	141426.	90465.	1.0000
61411	6083711.	1204473.	7288184.	4.	4.	79.4	141426.	90465.	1.0000
61412	6466565.	1283649.	7750214.	4.	4.	80.8	141426.	90465.	1.0000
61413	6792395.	1373430.	8165825.	4.	4.	82.8	141426.	90465.	1.0000
61414	6678760.	1367614.	8046374.	4.	4.	81.9	141426.	90465.	1.0000
61415	5432629.	1080210.	6512839.	4.	4.	78.4	141426.	90465.	1.0000
61416	4474579.	872512.	5347091.	4.	4.	73.9	141426.	90465.	1.0000
61417	3608903.	708528.	4317432.	4.	4.	69.5	141426.	90465.	1.0000
61418	1875511.	476006.	2351517.	4.	4.	65.0	136517.	90465.	0.9653
61419	1116705.	396259.	1512964.	4.	4.	65.0	123847.	90465.	0.8757
61420	874478.	376441.	1250918.	4.	4.	65.0	124904.	90465.	0.8832
61421	734309.	347344.	1081653.	4.	4.	65.0	123235.	90465.	0.8714
61422	476221.	224855.	701076.	4.	4.	65.0	119112.	90465.	0.8422
61423	311525.	146922.	458447.	4.	4.	65.0	106988.	90465.	0.7565
61424	396137.	186937.	583074.	4.	4.	65.0	108833.	90465.	0.7695
	UMMARY (JUN 14)								
MN	311525.	146922.	458447.			65.0	106988.	90465.	0.7565
MX	6792395.	1373430.	8165825.			82.8	141426.	90465.	1.0000
SM	84365104.	18068416.	102433504.			1778.5	3223398.	2171169.	22.7920
AV	3515213.	752851.	4268063.	4.	4.	74.1	134308.	90465.	0.9497
	SUMMARY (JUN)								
MN	311525.	146922.	458447.			65.0	106988.	90465.	0.7565
MX	7271629.	1507925.	8779554.			84.0	141426.	90465.	1.0000
SM	190433216.	39914972.	230348192.			3651.2	6571031.	4342338.	46.4625
AV	3967359.	831562.	4798921.	4.	4.	76.1	136896.	90465.	0.9680

ENTECH ENGINEERING 19603 READING,

7281769.

4604775

110514592.

ΜX SM

ΔV

1502584.

945147.

22683538.

8784353.

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96.

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EZDOE - BLITE SOFTWARE DEVELOPMENT INC

DOB-2.1D 6/18/1996

2: 7:39 PDL RUN 1

4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RP_1 * HOURLY-REPORT PAGE 5- 1 ........ HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING~ COOLING-T-CHLR TWR TWR TWR TWR TWR TWR T-CHLR TWR BLECTRIC SIZES MINIMUM TOWER Fan PUMP FRAC HR LOAD USE RUNNING CELL NO. TEMP BLEC BLEC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----(3) ----( 1) ---- (20) ---- ( 1) ----(19) ---- (21) ----(6) ----(9) ---- (23) 818 1 2536384. 563673. 3100056. 4. 74.0 137821. 90465. 0.9745 4. 539448. 2873622. 73.0 137421. 90465. 818 2 2334174. 4. 4. 0.9717 818 3 2237630. 525018. 2762648. 73.0 136803. 90465. 0.9673 136575. 818 4 2064430. 505578. 2570008. 4. 4. 72.0 90465. 0.9657 482605. 2360416. 136255. 90465. 1877811. 71.0 818 5 4. 4. 0.9634 2772317. 583158. 3355475. 72.0 140631. 90465. 0.9944 4. 4. 818 6 4335458. 815039. 5150497. 75.2 141426. 90465. 1.0000 818 7 818 8 5256840. 996690. 6253530. 4. 4. 78.1 141426. 90465. 1.0000 1127677 79.0 818 9 5808053 6935730 4. 4. 141426. 90465. 1.0000 1223490. 7441865. 80.4 141426. 90465. 1.0000 6218376. 4. 81810 4. 6601525. 1324143. 7925668. 81.8 141426. 90465. 1.0000 4. 4. 81811 6680344. 1356615. 8036959. 81.1 141426. 90465. 1.0000 81812 81813 7079866. 1446835. 8526701. 4. 4. 81.7 141426. 90465. 1,0000 1502584. 8784353. 83.6 141426. 90465. 1.0000 81814 7281769. 4. 4. 6946938. 1441591. 8388528. 4. 4. 85.5 141426. 90465. 1.0000 81815 81816 5940299. 1224131. 7164430. 84.1 141426. 90465. 1.0000 81817 5673811. 1151062. 6824874. 4. 4. 83.7 141426. 90465. 1.0000 81818 5161632. 1040863. 6202494. 4. 4. 83.0 141426. 90465. 1.0000 4581775. 923552. 5505327. 4. 82.3 141426. 90465. 1.0000 81819 4. 4249036. 858486. 5107522. 81.0 141426. 90465. 1.0000 81820 81821 4032552. 813154. 4845706. 4. 4. 81.0 141164. 90465. 0.9981 777868. 4595569. 140182. 81822 3817701. 4. 4. 81.0 90465. 0.9912 745860. 139195. 4361492. 81.0 90465. 81823 3615632. 4. 4. 0.9842 4124671. 81.0 138126. 90465. 3410250. 714421. 81824 DATLY SUMMARY (AUG 18) 71.0 136255. 90465. 482605. 2360416. 0.9634 1877811. 4. MN

85.5

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141426.

3364144.

140173.

90465.

90465.

2171169.

1.0000

23.7872

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 2: 7:39 PDL RUN 1
RRADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1 = HOURLY-REPORT PAGE 6- 1

									PAGE 6	,
	HERM-CEN	HERM-CEN	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	
	T-CHLR	T-CHLR	TWR	TWR	TWR	TWR	TWR	TWR	TWR	
	LOAD	BLECTRIC	LOAD	SIZES	MINIMUM	TOWER	PAN	PUMP	FRAC HR	
		USE		RUNNING	CELL NO.	TEMP	BLEC	BLEC	FANS RUN	
	BTU/HR	BTU/HR	BTU/HR			P	BTU/HR	BTU/HR	FRAC.OR	
						-	,	220,121	MULT.	
	( 1)	(3)	(1)	(6)	(9)	(19)	(20)	(21)	(23)	
819 1	3153977.	676731.	3830708.	4.	4.	80.0	137306.	90465.	0.9709	
819 2	3031609.	654113.	3685723.	4.	4.	80.0	136567.	90465.	0.9656	
819 3	2824754.	625788.	3450542.	4.	4.	79.0	135979.	90465.	0.9615	
819 4	2751367.	611254.	3362621.	4.	4.	79.0	135493.	90465.	0.9580	
819 5	2710398.	605888.	3316286.	4.	4.	79.0	135231.	90465.	0.9562	
819 6	3472536.	712725.	4185261.	4.	4.	79.0	139575.	90465.	0.9869	
819 7	4895288.	952448.	5847736.	4.	4.	80.1	141426.	90465.	1.0000	
819 8	5613660.	1102562.	6716222.	4.	4.	80.3	141426.	90465.	1.0000	
819 9	6122802.	1213702.	7336503.	4.	4.	81.0	141426.	90465.	1.0000	
81910	6208665.	1239796.	7448460.	4.	4.	80.4	141426.	90465.	1.0000	
81911	6379204.	1272526.	7651730.	4.	4.	81.4	141426.	90465.	1.0000	
81912	6527596.	1316968.	7844564.	4.	4.	81.7	141426.	90465.	1.0000	
81913	6886882.	1405727.	8292609.	4.	4.	83.8	141426.	90465.	1.0000	
81914	6712683.	1386316.	8098998.	4.	4.	82.8	141426.	90465.	1.0000	
81915	6310945.	1279852.	7590797.	4.	4.	81.4	141426.	90465.	1.0000	
81916	5313110.	1051291.	6364402.	4.	4.	79.9	141426.	90465.	1.0000	
81917	4922273.	963622.	5885894.	4.	4.	80.1	141426.	90465.	1.0000	
81918	4453642.	879778.	5333420.	4.	4.	77.9	141426.	90465.	1.0000	
81919	3853985.	765521.	4619506.	4.	4.	77.1	141426.	90465.	1.0000	
81920	3572672.	718228.	4290899.	4.	4.	75.2	141426.	90465.	1.0000	
81921	3253499.	662527.	3916027.	4.	4.	73.2	141426.	90465.	1.0000	
81922	2999245.	619772.	3619017.	4.	4.	72.1	141426.	90465.	1.0000	
81923	2720708.	580004.	3300711.	4.	4.	71.0	141146.	90465.	0.9980	
81924	2453723.	544165.	2997888.	4.	4.	69.0	141355.	90465.	0.9995	
DATI.V C	UMMARY (AUG 19)									
MN	2453723.	544165.	2997888.	4.	4.	60.0	*	****		
MX	6886882.	1405727.	8292609.			69.0	135231.	90465.	0.9562	
SM	107145208.	21841304.	128986520.	4. 96.	4.	83.8	141426.	90465.	1.0000	
AV	4464384.	910054.	5374439.	4.	96. 4.	1884.3 78.5	3365477.	2171169.	23.7967	
	4404504.	910054.	53/4439.	4.	4.	78.5	140228.	90465.	0.9915	
MONTHLY	SUMMARY (AUG)					•				
MN	1877811.	482605.	2360416.	4.	4.	69.0	135231.	90465.	0.9562	
MX	7281769.	1502584.	8784353.	4.	4.	85.5	141426.	90465.	1.0000	
SM	217659808.	44524840.	262184656.	192.	192.	3783.8	6729621.	4342338.	47.5839	
AV	4534580.	927601.	5462181.	4.	4.	78.8	140200.	90465.	0.9913	

ENTECH ENGINEERING READING, 19603 EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOB-2.1D 6/18/1996

2: 7:39 PDL RUN 1

4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RP_1 - HOURLY-REPORT PAGE 7- 1 ----------HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR BLECTRIC LOAD LOAD SIZES MINIMUM TOWER FAN PUMP FRAC HR USE RUNNING CELL NO. TEMP BLEC RLRC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----(1) ----(3) ----(1) ----( 6) ----( 9) ----(19) ---- (20) ---- (21) ---- (23) 302722. 142762. 10 9 1 445485. 4. 4. 65.0 106791 90465. 0.7551 302722. 142762. 445485. 4. 65.0 4. 106791. 90465. 0.7551 10 9 3 302722. 142762. 445485. 65.0 106791. 90465. 0.7551 10 9 4 302722. 142762. 445485. 65.0 106791. 90465. 0.7551 10 9 5 302722. 142762. 445485. 4. 4. 65.0 106791. 90465. 0.7551 142762. 302722. 445485. 4. 4. 65.0 106791. 90465. 0.7551 10 9 7 310268. 146328. 456596. 4. 106960. 65.0 90465. 0.7563 10 9 8 350550. 165372. 515923. 65.0 107849. 90465. 0.7626 10 9 9 361058. 170342 531399. 4. 4. 65.0 108078. 90465. 0.7642 10 910 375266. 177062. 552328. 4. 4. 65.0 108385. 90465. 0.7664 335382. 158200. 493581. 4. 4. 65.0 107516. 90465. 0.7602 10 912 322481. 152101. 474582. 4. 65.0 107231. 90465. 0.7582 10 913 343681. 162124. 505805. 4. 65.0 107698. 90465. 0.7615 10 914 379552. 179090. 558643. 4. 4. 65.0 108478. 90465. 0.7670 10 915 347345. 163856. 511201. 4. 4. 65.0 107779. 90465. 0.7621 10 916 387722. 182955. 570677. 4. 4. 65.0 108653. 90465. 0.7683 10 917 339555. 160173. 499728. 4. 107608. 90465. 0.7609 10 918 341501. 161093. 502594. 4. 4. 65.0 107651. 90465. 0.7612 10 919 311592. 146954. 458545. 4. 4. 65.0 106989. 90465. 0.7565 10 920 321309. 151547. 472857. 4. 4. 65.0 107205. 90465. 0.7580 10 921 302722. 142762. 445485. 4. 65.0 106791. 90465. 0.7551 10 922 302722. 142762. 445485. 4. 4. 65.0 106791. 0.7551 10 923 142762. 302722. 90465. 445485. 4. 4. 65.0 106791. 0.7551 10 924 309472. 145952. 455424. 4. 4. 65.0 106942. 90465. 0.7562 DAILY SUMMARY (OCT 9) 142762. MN 302722. 445485. 65.0 106791. 4. 90465. 0.7551 ΜX 387722. 182955. 570677. 4. 4. 65.0 108653. 90465. 0.7683 SM 7861235. 3708009. 11569244. 2576145. 2171169. 18.2154 ΑV 327551. 154500. 482052. 4. 65.0 107339. 0.7590

ENTECH ENGINEERING READING, 19603 PA = HOURLY-REPORT

EZDOE - ELITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 6/18/1996

2: 7:39 PDL RUN 1

RP_1 PAGE 8- 1 ................. HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD MINIMUM SIZES TOWER PAN PIMP FRAC HR RUNNING CELL NO. HSR TEMP RLEC RLRC PANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ----(3) ----( 1) ----(6) ----(9) ---- (19) ---- (20) ---- (21) ---- (23) 1010 1 302722 142762 445485. 4. 65.0 106791. 90465. 0.7551 1010 2 302722. 142762. 106791. 445485. 4. 4. 65.0 90465. 0.7551 1010 3 302722. 142762. 445485. 4. 4. 65.0 106791. 90465. 0.7551 1010 4 302722. 142762. 445485. 65.0 90465 4. 106791 0.7551 1010 5 302722. 142762. 445485. 65.0 106791. 90465 0 7551 1010 6 302722. 142762. 445485. 4. 65.0 106791. 90465. 0.7551 1010 7 302722. 142762. 445485. 4. 4. 65 A 106791. 90465. 0.7551 1010 8 353627. 166827. 520455. 4. 4. 65.0 107916 90465 0.7631 1010 9 410347 193662 604009. 65.0 109135. 90465. 0.7717 101010 317377. 149688. 467065 4. 65.0 107118. 90465. 0.7574 101011 186932. 583059. 4. 4. 65.0 108833. 90465. 0.7695 101012 353404. 166722. 520126. 4. 4. 65.0 107911. 90465 0.7630 101013 302722 142762 445485. 65.0 106791. 90465. 0.7551 101014 310630. 146499. 457129. 4. 4. 65.0 106968. 90465. 0.7564 101015 333411. 157268. 490679. 4. 4. 65.0 107473. 90465. 0.7599 101016 316320. 149189. 465509. 4. 107095. 65.0 90465. 0.7572 101017 302722. 142762. 445485 4. 106791. 90465. 0.7551 101018 302722. 142762. 445485. 4. 4. 65.0 106791. 90465. 0.7551 101019 302722. 142762. 445485. 4. 4. 65.0 106791. 90465 0.7551 101020 302722. 142762 445485. 106791. 65.0 90465 0.7551 101021 303316. 143043. 446359. 4. 4. 65.0 106805. 90465. 0.7552 101022 302722. 142762. 445485. 4. 0.7551 4. 65 0 106791. 90465. 101023 302722. 142762. 445485. 65.0 106791. 90465 0 7551 101024 302722. 1.42762. 445485. 65.0 106791. 90465. 0.7551 DAILY SUMMARY (OCT 10) 142762. 302722. MN 445485 4, 4. 65.0 106791. 90465. 0.7551 410347. 193662. 604009. 4. 4. 65.0 109135. 90465. 0.7717 SM 7635397 3601262. 11236656. 96. 96. 1560.0 2571125. 2171169 18.1799 ΑV 318142. 150053. 468194. 65.0 107130. 90465. 0.7575 MONTHLY SUMMARY (OCT) MN 302722. 142762. 445485. 65.0 106791. 4. 90465. 0.7551 MX 410347. 193662. 604009. 4. 65.0 109135. 90465. 0.7717 7309271. 22805900. 192. 192. 3120.0 5147270. 4342338. ΑV 322847. 152276. 475123. 4. 65.0 107235. 90465. 0.7582 YEARLY SUMMARY MN 302722. 142762. 445485. 4. 64.7 106791. 90465 0.7551 7281769. MX 1507925. 8784353. 4. 85.5 141426. 90465. 1.0000 561717696. 121525072. 683242688. 768 768 13882.7 24750108 17369352. 175.0034 ΑV 2925613. 632943. 3558556. 72.3 4. 128907. 90465. 0.9115

Houry 2-Speed RESULTS

BZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 2:10:24 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHOL ENTECH ENGINEERING 2:10:24 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SC REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE MBTU -	DI DOME TOTAL	FURL-OIL
IN SILE MBIU -	BUBCIRICITI	FUEL-UIL
CATEGORY OF USE		
SPACE HEAT	229.01	5128.55
SPACE COOL	2659.66	0.00
HVAC AUX	5352.53	0.00
DOM HOT WTR	0.00	0.00
AUX SOLAR	0.00	0.00
LIGHTS	10258.61	0.00
VERT TRANS	0.00	0.00
MISC EQUIP	4521.42	0.00
TOTAL	23021.24	5128.55

TOTAL SITE ENERGY TOTAL SITE ENERGY 28149.62 MBTU 85.4 KBTU/SQFT-YR GROSS-AREA 85.4 KBTU/SQFT-YR NBT-AREA TOTAL SOURCE ENERGY 74261.00 MBTU 225.4 KBTU/SQFT-YR GROSS-AREA 225.4 KBTU/SQFT-YR NBT-AREA 28149.62 MBTU 85.4 KBTU/SQPT-YR GROSS-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 3.7 PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOR-2.1D 6/18/1996 2:10:24 PDL RUN 1 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL RP_1 - HOURLY-REPORT .-----MMDDHH HERM-CEN HRRM-CRN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR TWR LOAD BLECTRIC SIZES MINIMUM LOAD TOWER PAN PUMP FRAC HR USE RUNNING CELL NO. TEMP RLRC RIRC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ----( 3) ----( 1) ----(6) ----(9) ----(19) ---- (20) ----(21) 525 1 618332, 292245. 910577. 4. 4. 65.0 16184 90465 0.9155 525 2 411510. 194213. 605723. 4. 65.0 15590. 90465 0.8818 525 3 437646. 206585. 644231. 4. 4. 65.0 15668. 90465. 0.8863 525 4 459344. 216860. 676205. 4. 4. 65.0 15732. 90465. 0.8899 525 5 431755. 203796. 635551. 65.0 15650 90465. 0.8853 525 6 631318. 298410. 929728. 65.0 16219. 90465 0.9175 525 7 1706845. 450241. 2157086. 4. 4. 65.0 36892. 90465. 0.1553 525 8 2762013. 567236. 3329249. 4. 4. 65 A 95720. 0.6306 525 9 3854814 716778. 4571592. 4. 65.0 138699 90465. 0.9780 52510 4301003. 786343 5087345. 4. 65.1 141426. 90465. 1.0000 52511 4666796. 847285. 5514080. 4. 4. 65.8 141426. 90465. 1.0000 52512 4869973. 884564. 5754538. 4. 4. 66.3 141426. 90465. 1.0000 52513 5409071 984778 6393799. 68.6 141426. 90465. 1.0000 52514 4793663. 879746. 5673409 4. 4. 67.3 141426. 90465. 1.0000 52515 4132488. 765379. 4897868. 4. 4. 64.7 141426. 90465. 1.0000 52516 3212557. 624823. 3837380. 4. 65.0 129284 90465. 0.9019 52517 2672214. 556242 3228457. 65.0 123537. 90465. 0.8554 52518 2226339. 504528. 2730867. 4. 4. 4. 65.0 122077. 90465. 0.8436 52519 1382371. 419556. 1801927. 4. 65.0 81590. 90465. 0.5165 52520 1186833. 402250. 1589082. 65.0 70469. 90465. 0.4266 52521 1013197. 387625. 1400821. 4. 65.0 35360. 90465. 0.1429 52522 848518. 374397. 1222915. 4. 4. 65.0 23634. 90465. 0.0481 52523 762992. 360986. 1123978. 4. 4. 65.0 17661. 90465. 0.9990 52524 654281. 309315. 963596. 65.0 16281. 90465 0.9210 DAILY SUMMARY (MAY 25) 411510. MN 194213. 605723. 64.7 15590. 90465 0.0481 ΜX 5409071. 984728. 6393799. 4. 4. 68.6 141426. 90465. 1.0000 SM 53445864. 12234129. 65680004. 96. 96. 1567.8 1834806 2171169. 18.7951 ΑV 2226911. 509755. 2736667. 65.3

76450.

90465.

0.7831

ENTECH ENGINEERING

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 2:10:24 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RP 1 = HOURLY-REPORT

RP_1	= HOUR	LY-REPORT						NOT HEU OND!		2- :
	HERM-CEN	HERM-CEN	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	COOLING-	
	T-CHLR	T-CHLR	TWR	TWR	TWR	TWR	TWR	TWR	TWR	
	LOAD	BLECTRIC	LOAD	SIZES	MINIMUM	TOWER	PAN	PUMP	FRAC HR	
		USE		RUNNING	CELL NO.	TEMP	RLEC	BLBC	FANS RUN	
	BTU/HR	BTU/HR	BTU/HR			P	BTU/HR	BTU/HR	FRAC.OR	
							•	,	MULT.	
	( 1)	(3)	( 1)	(6)	(9)	(19)	(20)	(21)	(23)	
526 1	624341.	295098.	919438.	4.	4.	65.0	16200.	90465.	0.9164	
526 2	578325.	273260.	851585.	4.	4.	65.0	16074.	90465.	0.9092	
526 3	470532.	222160.	692692.	4.	4.	65.0	15765.	90465.	0.8918	
526 4	427352.	201711.	629063.	4.	4.	65.0	15637.	90465.	0.8845	
526 5	436795.	206182.	642977.	4.	4.	65.0	15666.	90465.	0.8861	
526 6	838944.	373647.	1212591.	4.	4.	65.0	22932.	90465.	0.0425	
526 7	3627962.	683317.	4311280.	4.	4.	68.7	141426.	90465.	1.0000	
526 8	4515940.	832542.	5348482.	4.	4.	72.3	141426.	90465.	1.0000	
526 9	4959050.	925133.	5884183.	4.	4.	74.5	141426.	90465.	1.0000	
52610	5139727.	970342.	6110069.	4.	4.	75.6	141426.	90465.	1.0000	
52611	5441774.	1035158.	6476932.	4.	4.	76.8	141426.	90465.	1.0000	
52612	5838525.	1124508.	6963033.	4.	4.	78.2	141426.	90465.	1.0000	
52613	6225351.	1218847.	7444198.	4.	4.	79.6	141426.	90465.	1.0000	
52614	6348487.	1258375.	7606862.	4.	4.	79.8	141426.	90465.	1.0000	
52615	6132609.	1211687.	7344296.	4.	4.	80.3	141426.	90465.	1.0000	
52616	5372993.	1054609.	6427603.	4.	4.	79.1	141426.	90465.	1.0000	
52617	4961285.	965807.	5927092.	4.	4.	77.7	141426.	90465.	1.0000	
52618	4347851.	846228.	5194078.	4.	4.	76.9	141426.	90465.	1.0000	
52619	3761942.	745937.	4507880.	4.	4.	76.2	141426.	90465.	1.0000	
52620	3355095.	681606.	4036701.	4.	4.	76.0	137092.	90465.	0.9650	
52621	3099357.	644638.	3743995.	4.	4.	75.0	132873.	90465.	0.9309	
52622	3000988.	627077.	3628066.	4.	4.	75.0	129175.	90465.	0.9010	
52623	2668355.	583710.	3252065.	4.	4.	74.0	121628.	90465.	0.8400	
52624	2508545.	560278.	3068822.	4.	4.	74.0	114977.	90465.	0.7863	
DAILY S	UMMARY (MAY 26)									
MN	427352.	201711.	629063.	4.	4.	65.0	15637.	90465.	0.0425	
MX	6348487.	1258375.	7606862.		4.	80.3	141426.	90465.	1.0000	
SM	84682128.	17541858.	102223976.		96.	1759.9	2576562.	2171169.	21.9537	
AV	3528422.	730911.	4259333.		4.	73.3	107357.	90465.	0.9147	
MONTHLY	SUMMARY (MAY)									
MN	411510.	194213.	605723.	4.	4.	64.7	15590.	2245-		
MX	6348487.	1258375.	7606862.		4.	80.3		90465.	0.0425	
SM	138128000.	29775988.	167903984.		192.	3327.7	141426.	90465.	1.0000	
AV	2877667.	620333.	3498000.		4.	69.3	4411369. 91904.	4342338.	40.7488	
		020000.	3450000.	*.	٠.	07.3	91904.	90465.	0.8489	

ENTECH ENGINEERING BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 2:10:24 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 READING. PA 19603 - HOURLY-REPORT RP 1 PAGE 3- 1 HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD SIZES MINIMUM TOWER FAN PUMP FRAC HR RUNNING CELL NO. USR BLBC TEMP BLEC FANS RUN BTU/HR BTU/HR BTU/HR F BTU/HR BTU/HR FRAC.OR MULT. ---(1) ----(3) ----( 1) ----(6) ----(9) ---- (19) ---- (20) ---- (21) ---- (23) 613 1 1978521. 499272. 2477793. 4. 4. 74.0 90758. 90465. 0.5905 1961302. 613 2 497405. 2458708. 4. 4. 74.0 89898. 90465. 0.5836 613 3 1876837. 488353. 2365190. 4. 4. 74.0 85612. 90465. 0.5490 613 4 1812907. 481616. 2294523. 4. 4. 74.0 82288 90465. 0.5221 613 5 1836007. 484039. 2320046. 75.0 4. 4. 76921. 90465. 0.4787 613 6 2841241. 605906. 3447147. 75.0 123138. 90465. 0.8522 613 7 4415719. 842722. 5258441. 4. 4. 77.0 141426. 90465. 1.0000 613 8 5238986. 1004274. 6243259. 4. 4. 78.9 141426. 90465. 1.0000 613 9 5833208. 1139176. 6972384. 4. 4. 80.6 141426, 90465. 1.0000 61310 6349579. 1267680. 7617259. 4. 4. 82.2 141426. 90465. 1.0000 61311 6600368. 1341880. 7942248. 4. 82.6 141426. 90465. 1,0000 61312 7022062. 1448864. 8470926. 4. 4. 84.0 141426. 1.0000 61313 1458491. 8452724. 4. 4. 82.4 141426. 90465. 1.0000 61314 7271629. 1507925. 8779554. 4. 4. 83.6 141426. 90465. 1.0000 61315 6310310. 1287850. 7598160. 4. 4. 79.0 141426. 90465. 1.0000 61316 5762688. 6887969. 1125281 4. 4. 78.1 90465. 1.0000 61317 5415416. 1047087. 6462502. 4. 4. 80.0 141426. 90465. 1.0000 61318 4953252. 970333. 5923585. 90465. 4. 78.5 4. 141426. 1.0000 4347997. 61319 851085. 5199081. 4. 4. 77.7 141426. 90465 1.0000 61320 3921492. 775505. 4696997. 4. 77.2 141426. 90465. 1.0000 61321 3655017. 731102. 4386119. 4. 4. 76.9 141426. 1.0000 61322 3392706. 690490. 4083196. 4. 4. 76.0 138458. 90465. 0.9760 61323 3221664. 661677. 3883340. 76.0 132449. 90465. 0.9275 61324 3054979. 638549. 3693528. 4. 76.0 126400. 90465. 0.8786 DAILY SUMMARY (JUN 13) MN 1812907. 481616. 2294523. 74.0 76921. 90465. 0.4787 MX 7271629. 1507925. 8779554. 4. 4. 84.0 141426. 90465. 1.0000 SM 106068112. 21846556. 127914696. 96. 96. 1872.8 3067319. 2171169. 21.3582 ΑV 4419505. 5329779.

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127805.

90465.

ENTECH ENGINEERING READING,

EZDOE - BLITE SOFTWARE DEVELOPMENT INC 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

DOE-2.1D 6/18/1996

2:10:24 PDL RUN 1

RP_1 = HOURLY-REPORT PAGB 4- 1 ------HERM-CEN HERM-CRN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD SIZES MINIMUM TOWER FAN PUMP FRAC HR USB RUNNING CELL NO. TEMP BLRC FANS RUN BTTI/HP BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ----(3) ----(19) ---- ( 1) ----(6) ----(9) ----(20) ---- (21) ---- (23) 614 1 2812733. 606183. 3418916. 4. 4. 76.0 117013. 90465. 0.8027 614 2 2660563. 586604. 3247167. 4. 4. 75.0 116068. 90465. 0.7951 614 3 2611037. 576516. 3187552. 4. 4. 76.0 108472. 90465. 0.7337 614 4 2477601. 563827. 3041428. 4. 76.0 102758. 90465. 614 5 2410466. 555678. 2966144. 4. 76.0 99712. 90465. 0.6629 614 6 3401448. 687409. 4088857. 4. 4. 77.0 134156. 90465. 0.9412 614 7 4922452. 944387. 5866839. 4. 4. 79.3 141426. 90465. 1.0000 614 8 5780206. 1130959. 6911166. 4. 4. 81.3 141426. 90465. 1.0000 614 9 5858298 1165021. 7023318. 4. 4. 79.9 141426. 90465. 61410 6107864. 1206654. 7314518. 4. 80.2 141426. 90465. 1.0000 61411 6083711. 1204473. 7288184. 4. 4. 79.4 141426. 90465. 1.0000 61412 6466565. 1283649. 7750214. 4. 4. 80.8 141426. 90465. 1.0000 61413 6792395. 1373430. 8165825. 4. 4. 82.8 141426. 90465. 1.0000 61414 6678760. 1367614. 8046374. 4. 81.9 141426. 90465. 1.0000 61415 5432629. 1080210. 6512839. 4. 78.4 141426. 90465. 1.0000 61416 4474579. 5347091. 4. 4. 73.9 141426. 90465. 1.0000 61417 3608903. 708528. 4317432. 4. 4. 69.5 141426. 90465. 1.0000 61418 1875511. 476006 2351517. 4. 65.0 106984. 90465 0.7217 61419 1116705. 396259. 1512964. 4. 18110. 90465. 0.0035 61420 874478. 376441. 1250918. 4. 4. 65.0 25526. 90465. 0.0634 61421 734309. 347344. 1081653. 4. 17600. 4. 65.0 90465. 0.9955 61422 476221. 224855 701076. 4. 4. 65.0 17011. 90465. 0.9622 61423 311525. 146922. 458447. 15279. 90465. 0.8643 61424 396137. 186937. 583074. 4. 4. 65.0 15543. 90465. 0.8792 DAILY SUMMARY (JUN 14) 65.0 311525. 146922. 458447. 4. 4. 15279. 90465. 0.0035 6792395. MX 8165825. 4. 4. 82.8 141426. 90465. 1.0000 SM 84365104. 18068416. 102433504. 1778.5 96. 2449923 2171169. ΑV 3515213. 752851 4268063. 4. 74.1 102080. 90465. MONTHLY SUMMARY (JUN) 146922. MN 311525. 458447. 4. 4. 65.0 15279 90465. 0.0035 MX 7271629. 1507925 8779554. 4. 84.0 141426. 90465. 1.0000 190433216. 39914972. 230348192. 192. 192. 3651.2 5517242. 4342338. 41.4713 ΑV 3967359. 831562. 4798921. 4. 4. 76.1 114943. 0.8640

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 6/18/1996 2:10:24 PDL RUN 1 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RP_1 - HOURLY-REPORT PAGE 5- 1 -----HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR MINIMUM TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD SIZES TOWER PAN PUMP FRAC HR IISR RUNNING CELL NO. TEMP RLEC RI.RC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ----(3) ----( 1) ----(6) ----(9) ---- (19) ---- (20) ---- (21) ---- (23) 818 1 2536384 563673. 3100056. 4. 4. 74.0 116137. 90465. 0.7956 818 2 2334174. 539448. 2873622. 73.0 113332. 90465. 0.7730 818 3 2237630. 525018. 2762648. 4. 73.0 108996. 90465. 0.7379 818 4 2064430. 505578. 2570008. 4. 4. 72.0 107394. 90465. 0.7250 818 5 1877811. 482605. 2360416. 4. 71.0 105148. 90465. 0.7068 818 6 2772317. 583158. 3355475. 72.0 135843. 90465. 0.9549 818 7 4335458. 815039. 5150497. 4. 75.2 141426. 90465. 1.0000 818 8 5256840. 996690. 6253530. 4. 4. 78.1 141426. 90465. 1.0000 818 9 5808053. 1127677. 6935730. 4. 4. 79.0 141426 90465. 1.0000 81810 6218376. 1223490. 7441865. 80.4 141426. 90465 1.0000 81811 6601525. 1324143. 7925668. 4. 4. 81.8 141426. 90465. 1.0000 81812 6680344. 1356615. 8036959. 4. 4. 81.1 141426. 90465. 1.0000 81813 7079866. 1446835. 8526701. 4. 4. 81.7 141426. 90465. 1.0000 81814 7281769. 1502584. 8784353. 4. 83.6 141426. 90465. 1.0000 81815 6946938. 1441591. 8388528. 4. 4. 85.5 141426. 90465. 1.0000 7164430. 81816 5940299. 1224131. 4. 4. 84.1 83.7 141426. 90465. 1.0000 81817 5673811. 1151062. 6824874. 141426. 90465. 1.0000 81818 5161632. 1040863. 6202494. 4. 83.0 141426. 90465. 1.0000 81819 4581775. 923552. 5505327. 4. 4. 82.3 141426. 90465. 1.0000 81820 4249036. 858486. 5107522. 4. 81.0 4. 141426. 90465. 1.0000 81821 4032552. 813154. 4845706 4. 81.0 139584. 90465. 0.9851 81822 3817701. 777868. 4595569. 4. 81.0 132694. 90465. 0.9294 4361492. 81823 3615632 745860. 4. 4. 81.0 125774 90465. 0.8735 81824 3410250. 714421. 4124671. 4. 81.0 118273. 90465. 0.8129 DAILY SUMMARY (AUG 18) MN 1877811. 482605. 2360416. 4. 4. 71.0 105148. 90465. 0.7068 ΜX 7281769. 1502584. 8784353. 4. 85.5 141426. 90465. 1.0000 SM 110514592. 22683538. 133198136. 96. 1899.6 3183145. 2171169. 22.2942 AV 4604775.

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ENTECH ENGINEERING

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EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 2:10:24 PDL RUN 1 READING. 19603 PA 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 - HOURLY-REPORT RP_1 PAGE 6- 1 HERM-CEN HERM-CEN COOLING-COOLING- COOLING- COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD SIZES MINIMUM TOWER FAN PUMP FRAC HR USE RUNNING CELL NO. TEMP RLEC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----(1) ---(3) ----( 1) ----(6) ----(9) ---- (19) ---- (20) ---- (21) ---- (23) 819 1 3153977. 676731. 3830708. 4. 4. 80.0 112520. 90465. 0.7664 819 2 3031609. 654113. 3685723. 4. 80.0 107338. 90465. 0.7245 819 3 2824754. 625788. 3450542. 4. 4. 79.0 103213. 90465. 0.6912 819 4 2751367. 611254. 3362621. 4. 4. 79.0 99803. 90465. 0.6636 819 5 2710398. 605888. 3316286. 4. 79.0 4. 97969. 90465. 0.6488 819 6 3472536. 712725. 4185261. 128439. 90465. 0.8950 819 7 4895288. 952448. 5847736. 4. 4. 80.1 141426. 90465. 1.0000 819 8 5613660. 1102562. 6716222. 4. 4. 80.3 141426. 90465. 1.0000 819 9 6122802. 1213702. 7336503. 4. 4. 81.0 141426. 90465. 1.0000 81910 6208665. 1239796. 7448460. 4. 4. 80.4 141426. 90465. 1.0000 6379204. 81911 1272526. 7651730. 4. 81.4 141426. 90465. 1.0000 6527596. 81912 1316968. 7844564. 4. 4. 81.7 141426. 90465. 1.0000 81913 6886882. 1405727. 8292609. 4. 4. 83.8 141426. 90465. 1.0000 81914 6712683. 1386316. 8098998. 4. 4. 82.8 141426. 90465. 1.0000 81915 6310945. 1279852. 7590797. 4. 4. 81.4 141426. 90465. 1.0000 81916 5313110. 1051291. 6364402 4. 4. 79.9 141426. 90465. 1.0000 81917 4922273. 963622. 5885894. 4. 4. 80.1 141426. 90465. 1.0000 81918 4453642. 879778. 5333420. 4. 90465. 4. 77.9 141426. 1.0000 81919 3853985. 765521. 4619506. 4. 4. 77.1 141426. 90465 1.0000 81920 3572672. 718228. 4290899. 4. 4. 75.2 141426. 90465. 1.0000 81921 662527. 3916027. 4. 4. 73.2 141426. 90465. 1.0000 3619017. 81922 2999245 619772. 4. 72.1 4. 141426. 90465. 1.0000 81923 2720708. 580004. 3300711. 71.0 139462. 90465. 0.9841 81924 2453723. 544165. 2997888. 4. 4. 69.0 140928. 90465. 0.9960 DAILY SUMMARY (AUG 19) 2453723. 544165. MN 2997888. 4. 4. 69.0 97969. 90465. 0.6488 ΜX 6886882. 1405727. 8292609. 4. 4. 83.8 141426. 90465. 1.0000 SM 107145208. 128986520. 96. 96. 1884.3 3192497. 2171169. 22.3698 ΑV 4464384. 910054. 5374439. 4. 4. 78.5 133021. 90465. 0.9321 MONTHLY SUMMARY (AUG) MN 1877811. 482605. 2360416. 4. 4. 69.0 97969 90465. 0.6488

ENTECH ENGINEERING

MX

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7281769.

4534580.

217659808.

1502584.

927601.

44524840.

8784353.

5462181.

262184656

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141426.

6375641.

132826.

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4342338.

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ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 6/18/1996 2:10:24 PDL RUN 1 READING. 19603 PA 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 = HOURLY-REPORT RP_1 HERM-CEN HERM-CRN COOLING-COOLING- COOLING- COOLING-COOLING-COOT.TNC. COOLING-T-CHLR T-CHLR TWR TWR TWR TWR TWR TWR LOAD BLECTRIC LOAD STERS MINIMIM TOWER PAN PUMP FRAC HR USE RUNNING CELL NO. TEMP RLRC FANS RUN BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ---(3) ----(1) ----(6) ----(9) ---- (19) --- (20) ----(21) ---- (23) 302722. 142762. 10 9 1 445485. 4. 4. 65.0 15251. 90465. 0.8627 10 9 2 302722. 142762. 445485. 4. 4. 65.0 15251. 90465. 10 9 3 302722 142762. 445485. 4. 65.0 15251. 90465. 0.8627 10 9 4 302722. 142762 445485. 65.0 15251. 90465. 0.8627 10 9 5 302722. 142762. 445485. 4. 65.0 15251. 90465. 0.8627 10 9 6 302722. 142762. 445485. 4. 4. 65.0 15251. 90465. 0.8627 10 9 7 310268. 146328. 456596. 4. 65.0 15275. 90465. 0.8641 10 9 8 350550. 165372. 515923. 65.0 15402. 90465. 0.8713 10 9 9 361058. 170342. 531399. 4. 4. 65.0 15435. 90465. 0.8731 10 910 375266. 177062. 552328. 4. 4. 4. 65.0 15479. 90465. 0.8756 10 911 335382. 158200. 493581. 4. 65.0 15355. 90465. 0.8686 10 912 322481. 152101. 474582. 65.0 15314. 90465. 0.8663 10 913 343681. 162124. 505805. 4. 65.0 15381. 90465. 0.8700 10 914 379552. 558643. 4. 4. 65.0 15492. 90465. 10 915 347345. 163856. 511201. 4. 65.0 15392 90465 0.8707 10 916 387722. 182955. 570677. 4. 15517. 90465. 0.8778 10 917 339555. 160173. 499728. 4. 65.0 15368. 90465. 0.8693 10 918 341501. 161093. 502594. 4. 4. 65.0 15374. 90465. 0.8697 10 919 311592. 146954. 458545. 4. 4. 65.0 15280. 90465 0.8643 472857. 10 920 321309 151547. 15310. 90465. 0.8661 10 921 302722. 142762. 445485. 4. 65.0 15251. 0.8627 10 922 302722. 445485. 4. 4. 65.0 15251. 90465. 0.8627 10 923 302722. 142762. 445485. 4. 65.0 15251. 90465 0.8627 10 924 309472. 145952. 455424. 15273. 90465. 0.8639 DAILY SUMMARY (OCT 9) 65.0 MN 302722 142762 445485 15251. 90465. 0.8627 387722. ΜX 182955. 570677. 4. 4. 65.0 15517. 90465. 0.8778

SM

AV

7861235.

327551.

3708009.

154500.

11569244.

482052.

96.

96.

4.

1560.0

65.0

367909

15330.

2171169.

90465.

20.8113

ENTECH ENGINEERING READING,

SM

ΑV

561717696.

2925613.

121525072.

632943.

683242688.

3558556.

768.

4.

768.

4.

13882.7

72.3

17039352.

88747.

17369352.

90465.

168.4661

0.8774

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 6/18/1996

2:10:24 PDL RUN 1

19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RP_1 - HOURLY-REPORT PAGE 8- 1 HERM-CEN COOLING- COOLING- COOLING-HERM-CEN COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR TWR TWR TWR TNR TWR TWR TWR LOAD BLECTRIC LOAD SIZES MINIMUM TOWER PAN PUMP FRAC HR RUNNING CELL NO. USR RLRC FANS RUN TRMP RLRC BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR FRAC.OR MULT. ----( 1) ---(3) ----(1) ----(6) ----(9) ---- (19) ---- (20) ---- (21) ---- (23) 445485. 302722 142762. 65.0 15251. 90465. 0.8627 1010 1 4. 4. 0.8627 15251. 302722. 142762. 445485. 4. 65.0 90465. 1010 2 4. 1010 3 302722. 142762. 445485. 65.0 15251. 90465. 0.8627 1010 4 302722. 142762. 445485 4. 4. 65.0 15251. 90465 0.8627 142762. 445485. 65.0 15251. 90465. 0.8627 1010 5 302722. 4. 4. 302722. 142762. 445485. 4. 4. 65.0 15251. 90465. 0.8627 1010 6 1010 7 302722. 142762. 445485. 65.0 15251. 90465. 0.8627 1010 8 353627. 166827. 520455. 4. 4. 65.0 15412. 90465 0.8718 604009. 0.8816 1010 9 410347. 193662. 4. 4. 65.0 15586. 90465. 101010 317377. 149688. 467065. 4. 4. 65.0 15298. 90465. 0.8654 101011 396127. 186932. 583059. 65.0 15543. 90465. 0.8792 101012 353404. 166722 520126. 4. 4. 4. 65.0 15411. 90465. 0.8718 142762. 15251. 90465. 0.8627 101013 302722. 445485. 4. 65.0 310630. 146499. 457129. 4. 15277. 90465. 0.8641 101014 101015 333411. 157268. 490679. 4. 4. 65.0 15349. 90465 0.8682 465509. 65.0 15295. 90465. 0.8652 101016 316320. 149189. 4. 4. 142762. 445485. 4. 4. 65.0 15251. 90465. 0.8627 302722. 101017 302722. 142762. 445485. 4. 65.0 15251. 90465. 0.8627 101018 101019 302722. 142762. 445485. 4. 4. 65.0 15251. 90465. 0.8627 15251. 90465. 142762. 445485. 0.8627 4. 4. 65.0 101020 302722. 143043. 446359. 4. 65.0 15253. 90465. 0.8628 303316. 101021 101022 302722. 142762 445485. 4. 4. 65.0 15251. 90465. 0.8627 142762. 445485. 65.0 15251. 90465. 0.8627 101023 302722. 4. 4. 142762. 445485. 4. 4. 65.0 15251. 90465. 0.8627 302722. 101024 DATLY SUMMARY (OCT 10) 142762. 445485. 65.0 15251. 90465. 0.8627 302722. 4. 4. MN 410347. 193662. 604009. 65.0 15586. 90465. 0.8816 ΜX 2171169. SM 7635397. 3601262. 11236656. 96. 96 1560.0 367192 20 7708 150053. 468194. 65.0 15300. 0.8654 4. 4. 90465. ΑV 318142. MONTHLY SUMMARY (OCT) 142762. 65.0 15251. 90465. 0.8627 302722. 445485. 4. 4. MN 193662. 604009. 4. 15586. 90465. 0.8816 ΜX 410347. SM 15496632. 7309271. 22805900 192. 192. 3120.0 735101. 4342338 41.5821 AV 322847. 152276. 475123. 4. 4. 65.0 15315. 90465. 0.8663 YEARLY SUMMARY 64.7 15251. 90465. 0.0035 302722. 142762. 445485. 4. MN 4. 1507925. 8784353. 4. 141426. 90465. 1.0000 ΜX 7281769.

ECO-9

REA RS_1	ENTECH ENGING PA		EZDOE - EL 4130.05 FI	ITE SOFTWARE	DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 SDL RUN 1 MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1 PAGE 1- 1
MMDDHH	1SMCAHUS ZR	2SPERFC	3SPERFC	4SPERFC	
	SUPPLY BLECTRIC KW	SUPPLY ELECTRIC	SUPPLY BLECTRIC KW	SUPPLY BLBCTRIC	
	A.W	KW	V.M.	KW	
	(49)	(49)	(49)	(49)	
MONTHLY	SUMMARY (JAN)				
MIN	30.066	1.523	1.523	1.786	MCA SLATERA CE
MIX	30.066	1.523	1.523	1.786	1.104 2931201 20
SM	14792.671	749.415	749.415	878.909	·
AV	30.066	1.523	1.523	1.786	•
MONTHELLY	SUMMARY (FEB)				MCA System RE OFF-PEAK
MN	30.066	1.523	1.523	1.786	0/1 / 51.30
MX	30.066	1.523	1.523	1.786	
SM	13349.483	676.301	676.301	793.162	
AV	30.066	1.523	1.523	1.786	
				21700	
MONTHLY	SUMMARY (MAR)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	14071.077	712.858	712.858	836.035	
AV	30.066	1.523	1.523	1.786	
MONTHT.V	SUMMARY (APR)	1			
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	14071.077	712.858	712.858	836.035	
AV	30.066	1.523	1.523	1.786	
MONTHLY	SUMMARY (MAY)	ı			
MIN	30.066	1.523	1.523	1.786	•
MX	30.066	1.523	1.523	1.786	
SM	14792.671	749.415	749.415	878,909	
AV	30.066	1.523	1.523	1.786	
MONTHLY	SUMMARY (JUN)	l.			
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	13710.280	694.579	694.579	814.599	
AV	30.066	1.523	1.523	1.786	
MONTHLY	SUMMARY (JUL)	ı			
MN	30.066	1.523	1.523 1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	15153.468	767.693	767.693	900.346	
AV	30.066	1.523	1.523	1.786	

RBA	DING, PA		EZDOE - EL 4130.05 FT								
	1SMCAHUS ZR	2SPERFC	3SPERFC	4SPERFC	 		 	 	 	 	
	SUPPLY BLECTRIC KW	SUPPLY BLBCTRIC KW	SUPPLY BLECTRIC KW	SUPPLY BLECTRIC KW							
	(49)	(49)	(49)	(49)							
MONTHLY	SUMMARY (AUG)										
MN	30.066	1.523	1.523	1.786							
MX	30.066	1.523	1.523	1.786							
SM	14071.077	712.858	712.858	836.035							
AV	30.066	1.523	1.523	1.786							
MONTHLY	SUMMARY (SEP)										
MN	30.066	1.523	1.523	1.786							
MX	30.066	1.523	1.523	1.786							
SM	14071.077	712.858	712.858	836.035							
AV	30.066	1.523	1.523	1.786							
MONTHLY	SUMMARY (OCT)										
MN	30.066	1.523	1.523	1.786							
MX	30.066	1.523	1.523	1.786							
SM	15153.468		767.693	900.346							
AV	30.066	1.523	1.523	1.786							
	Y SUMMARY (NOV)										
MN	30.066	1.523	1.523								
MX	30.066	1.523	1.523	1.786							
SM	14431.874	731.136	731.136	857.472							
AV	30.066	1.523	1.523	1.786							
	Y SUMMARY (DEC)										
MN	30.066	1.523	1.523			•					
MX	30.066	1.523	1.523	1.786							
SM	14792.671	749.415	749.415	878.909 1.786							
AV	30.066	1.523	1.523	1.786							
	SUMMARY										
MN	30.066	1.523	1.523	1.786							
MX	30.066	1.523	1.523	1.786							
SM	172460.891	8737.077	8737.077								
AV	30.066	1.523	1.523	1.786							

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1

MDDHH	SSZF2MID	SSFZ3MID	SSZF4MID	0SMCAHUS			 	
				ZR				
	SUPPLY	SUPPLY	SUPPLY	SUPPLY				
	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC				
	KW	KW	KW	KW				
	(49)	(49)	(49)	(49)				
MONTHLY	SUMMARY (JAN)							
MN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM	11764.703	14392.478	14498.549	8640.309				
AV	23.912	29.253	29.469	17.562				
MONTHLY	SUMMARY (FEB)							
MN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM	10616.927	12988.333	13084.057	7797.351				
AV	23.912	29.253	29.469	17.562				
MONTHLY	SUMMARY (MAR)							
MIN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM			13791.303	8218.829				
VA	23.912	29.253	29.469	17.562				
	SUMMARY (APR)							
MN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM	11190.814	13690.405		8218.830				
AV	23.912	29.253	29.469	17.562				
	SUMMARY (MAY)							
MIN MIX	23.912 23.912	29.253 29.253	29.469	17.562	•			
SM	11764.703	29.253 14392.479	29.469 14498.549	17.562				
AV	23.912	29.253	29.469	8640.308 17.562				
MONTHT.Y	SUMMARY (JUN)							
MN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM	10903.871	13339.369	13437.680	8008.090				
AV	23.912	29.253	29.469	17.562				
MONTHLY	SUMMARY (JUL)							
MN	23.912	29.253	29.469	17.562				
MX	23.912	29.253	29.469	17.562				
SM		14743.514		8851.047				
AV	23.912	29.253	29.469	17.562				

	ENTECH ENGIN	19603			DEVELOPMENT INC MYER CENTER, NJ		/ 2/1996 H20 ONLY	:42 SD1	L RUN	1
RS_2	= HOU	RLY-REPORT						PAGE	2-	1
	SSZF2MID	SSFZ3MID	SSZF4MID	0SMCAHUS ZR		 		 		
	SUPPLY	SUPPLY	SUPPLY	SUPPLY						
		BLECTRIC	BLECTRIC	BLECTRIC						
	KW	KW	KW	KW						
	(49)	(49)	(49) ⁻	(49)						
MONTHLY	SUMMARY (AUG)									
MIN		29.253	29.469	17.562						
MX	23.912	29.253	29.469	17.562						
SM	11190.815	13690.406	29.469 13791.303	8218.829						
AV	23.912	29.253	29.469	17.562						
MONTHLY	SUMMARY (SEP)									
MIN	23.912	29.253	29.469	17.562						
MX	23.912	29.253	29.469	17.562						
SM	11190.815	13690.405	13791.303	8218.829						
AV	23.912	29.253	29.469	17.562						
MONTHLY	SUMMARY (OCT)									
MIN	23.912	29.253	29.469	17.562						
MX	23.912	29.253	29.469	17.562						
SM	12051.646	14743.514	14852.174	8851.047						
AV	23.912	29.253	29.469	17.562						
MONTHLY	SUMMARY (NOV)									
MIN	23.912	29.253	29.469	17.562						
MIX	23.912	29.253	29.469	17.562						
SM	11477.759	14041.441	14144.926	8429.568						
AV	23.912	29.253	29.469	17.562						
MONTHLY	SUMMARY (DEC)									
MN	23.912	29.253	29.469	17.562						
MX	23.912	29.253		17.562						
SM	11764.702	14392.478	14498.549	8640.308						
AV	23.912	29.253	29.469	17.562						
YRARLY	SUMMARY									
MIN	23.912	29.253	29.469	17.562						
MX	23.912	29.253	29.469	17.562						
SM	137159.203	167795.234		100733.344						
AV	23.912	29.253	29.469	17.562						

ENTECH ENGINEERING EZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

- HOULTY-REPORT DOB-2.1D 7/ 2/1996 16:24:42 SDL RUN 1 RS_3 MMODDHH 1EXTPER 1EXTPER 1INTPER 1INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 71.5 73.0 71.5 72.6 MX 75.5 74.7 75.5 75.0 SM 35510.0 36101.0 35574.0 36066.1 AV 72.2 73.4 72.3 73.3 MONTHLY SUMMARY (FEB) 72.9 MN 71.5 71.5 72.2 MX 75.5 74.4 75.5 74.8 SM 32182.0 32597.3 32318.0 32519.3 AV 72.5 73.4 MONTHLY SUMMARY (MAR) MN 71.5 73.2 71.5 72.7 MX 75.5 76.0 75.5 76.4 SM 34330.0 34462.2 34462.0 34458.2 AV 73.6 MONTHLY SUMMARY (APR) MIN 71.5 73.3 75.5 80.6 75.5 80.6 SM 35110.0 34876.8 35018.0 34910.4 ΑV 74.8 75.0 74.5 MONTHLY SUMMARY (MAY) 71.5 MN 71.5 73.2 73.5 MX 75.5 94.5 75.5 94.4 SM 37126.0 37292.4 37142.0 37430.1 ΑV 75.5 75.8 75.5 76.1 MONTHLY SUMMARY (JUN) MN 75.5 74.1 75.5 74.3 MX 75.5 75.9 75.5 76.8 SM 34428.0 34157.5 34428.0 34331.0

75.5

75.5

75.5

75.5

74.4

76.7

75.3

ΑV

MN

AV

75.5

75.5

75.5 74.2 75.5 75.9

MONTHLY SUMMARY (JUL)

74.9

SM 38052.0 37801.7 38052.0 37965.0

75.0

PAGE 1- 1

		PA	19603	4130			
RS_3			Y-REPORT				
		1EXTPER					
	THERMOST	ZONB TEMP	THERMOST	ZONE			
	SETPOINT	TEMP	SETPOINT	TEMP			
	F	P	F	P			
	(7)	( 6)	(7)	( 6)			
MONTHL	Y SUMMAR	(AUG)					
MN	75.5	73.9 76.0	75.5	74.1			
MX	75.5	76.0	75.5	76.4			
SM	35334.0	35068.0	35334.0	35191.7			
AV		74.9	75.5	75.2			
MONTHI	Y SUMMAR	Y (SEP) 73.7 75.6					
MN	75.5	73.7	75.5	73.5			
MX	75.5	75.6	75.5	76.3			
SM	35334.0	34967.9	35334.0	35012.0			
AV	75.5	34967.9 74.7	75.5	74.8			
MONTHI	Y SUMMAR	Y (OCT)					
MN	71.5	72.2 78.5 37540.6	71.5	71.9			
MX	75.5	78.5	75.5	77.4			
SM	37988.0	37540.6	37848.0	37485.4			
AV		74.5					
MONTHI	Y SUMMAR	Y (NOV)		73.1 81.9			
MN	71.5	73.2	71.5	73.1			
MX	71.5 75.5	81.5	75.5	81.9			
SM	35488.0	35502.4	35356.0	35494.0			
AV		74.0	73.7	73.9			
MONTH	LY SUMMAR	Y (DEC)					
MN	71.5	73.1	71.5	72.7			
MX	75.5	75.0	75.5	75.0 36148.0			
SM	35782.0	36155.9	36082.0	36148.0			
AV	72.7	73.5	73.3	73.5			
	Y SUMMARY						
MN	71.5	72.2 94.5	71.5	71.9			
SM				427011.3			
AV	74.4	74.4	74.4	74.4			

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

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ru.	DADING,	PA	19603	4130
RS_4		= HOURL	Y-REPORT	
MMDDHH	2EXTPER	2EXTPER	2INTPER	2INTPER
	THERMOST	ZONE	THERMOST SETPOINT F	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P	P	P	F
	(7)	(6)	(7)	(6)
	-		, ,	,
MONTHI	LY SUMMARY	(JAN)		
MIN	71.5	71.9	71.5 75.5 35274.0	71.9
MX	75.5	75.7	75.5	75.9
SM	35246.0	35940.1	35274 0	35960 8
AV	71 6	73.0	71.7	73 1
	,	,,,,		,,,,
MONTHI	Y SUMMARY	/ PRRI		
MIN	71 5	72 0	71 5	72 0
MY	75.5	75.0	71.5 75.5	72.0
SM	31858 0	32447 7	31938.0	22406 7
AV	71.8	73.1	71.9	73.2
AV	/1.0	/3.1	71.9	/3.2
MANTELL	V CIMMAN	/M332)		
MONTH	71 5	(MAR)	71.5 75.5	
MEN	71.5	72.6	71.5	72.6
MA.	75.5	80.1	75.5	81.0
SM	33826.0	34445.8	33898.0 72.4	34527.9
AV	72.3	73.6	72.4	73.8
W03		. /		
MONTHE	I SUMMARY	(APR)	71.5 75.5 34810.0	
MN	71.5	72.9	71.5	72.9
MX.	75.5	97.0	75.5	98.5
SM	34778.0	37635.9	34810.0	37986.0
AV	74.3	80.4	74.4	81.2
MONTHI	Y SUMMARY	(MAY)		
MIN	71.5	67.7	71.5	67.8
MX	75.5	102.3	71.5 75.5 36766.0	103.7
SM	36750.0	39135.3	36766.0	39408.5
AV	74.7	79.5	74.7	80.1
MONTHL	Y SUMMARY	(300)		
MN	71.5	73.4	71.5	73.4
MX	75.5	75.6	75.5	75.8
SM	34420.0	33889.8	34420.0	33909.2
AV	75.5	74.3	71.5 75.5 34420.0 75.5	74.4
MONTHI	Y SUMMARY	(MT)		
MN	75.5	73.6	75.5	73.6
MX	75.5	75.5	75.5 75.5 38052.0	75.6
SM	38052.0	37521.9	38052.0	37540.6
AV	75.5	74.4	75.5	74.5

ENTECH ENGINEERING BZDOR - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1

RS_4 = HOURLY-REPORT PAGE 2- 1

2EXTPER 2EXTPER 2INTPER 2INTPER 2INTPER

KS_4		= HOURL	Y-REPORT	
			2INTPER	
	THERMOST	ZONE	THERMOST	ZONE
	SETPOINT	TEMP	THERMOST SETPOINT	TEMP
				P
	( 7)	( 6)	(7)	(6)
MONTH	LY SUMMARY	Y (AUG)		
MIN	71.5	72.5	71.5	72.5
MX	75.5	75.5	75.5	75.6
SM	35282.0	34749.0	35282.0	34777.0
AV	75.4	74.2	75.4	74.3
1401	LY SUMMARY	. (cmm)		
MN			71.5	
PIA.	75.5	74.9	75.5 35222.0	75.0
AV	75.2			
AV	75.2	74.0	75.3	74.0
MONTH	LY SUMMARY			
MN	71.5	67.4	71.5	68.4
MX	75.5	89.9	75.5	92.3
SM	37412.0	38115.1	75.5 37536.0	38482.9
AV	74.2	75.6	74.5	76.4
MONTH	LY SUMMARY	r (NOV)		
MN			71.5	72 7
	75.5	90.0	75.5	90.7
CM	35128 0	36305 1	75.5 35228.0	30.7
AV				
~*	/3.2	75.0	73.4	76.1
	Y SUMMARY			
MN	71.5	72.6	71.5	72.6
MX	/3.3	19.5	/5.5	80./
SM			35406.0	36115.1
AV	71.9	73.3	72.0	73.4
YRARLY	SUMMARY			
MIN			71.5	67.8
MX	75.5	102.3	71.5 75.5	103.7
			423832.0	
AV			73.9	
				-

	ente Reading,	CH	ENGIN	BER	ING			BZDC
1	READING,		PA		196	03		4130
RS_5			= HOU	RLY	-RBPOR	T		
	3 BXTPE							
	THERMO	ST Z	ONE	,	THERMO	ST	ZONE	
	SETPOI	NT I	EMP		SETPOI	NT	TEMP	
	P	F	•		F		F	
	(	7) -	(	6)	(	7)	(	6)
MONT	ALY SUMM	ARY	(JAN)					
MI	N 71	.5	71	. 9	71	5	71	L.9
M	K 75	.5	75	. 7	75	.5	75	5.9
Si	4 35246	.0	35940	.1	35274	.0	35960	3.8
A	71	.6	73	. 0	71	7	73	3.1
MONT	HLY SUMM	ARY	(FRB)					
M	N 71 K 75	. 5	72	. 0	71	5	72	2.0
M	K 75	.5	75	. 4	75	.5	76	5.3
SI	1 31858	.0	32447	.7	31938	.0	32486	5.7
A ^r	V 71	. 8	73	. 1	71	9	73	3.2
MONT	HLY SUMM N 71 K 75	ARY	(MAR)					
M	N 71	.5	72	. 6	71	5	72	2.6
M	χ 75	.5	80	. 1	75	.5	81	1.0
SI	M 33826	.0	34445	. 8	33898	.0	34527	7.9
A'	¥ 72	.3	73	. 6	72	. 4	73	3.8
MONT	HLY SUMM	ARY	(APR)					
M	N 71	5	72	. 9	71	5	72	2.9
M	N 71 X 75 M 34778	. 5	97	.0	75	.5	98	3.5
SI	M 34778	.0	37635	. 8	34810	.0	37986	5.0
A'	V 74	.3	80	. 4	74	.4	81	1.2
MONT	BLY SUMM N 71 X 75	ARY	(MAY)					
M	N 71	5	67	.7	71	5	67	7.8
M	X 75	. 5	102	. 3	75	. 5	103	3.7
S	M 36750 V 74	.0	39135	. 4	36766	.0	39408	3.5
A	V 74	. 7	79	. 5	74	. 7	80	0.1
MONT	HLY SUMM N 71 X 75	ARY	(JUN)					
M	N 71	5	73	. 4	71	5	73	3.4
М	X 75	. 5	75	. 6	75	.5	75	5.8
S	M 34420	.0	33889	. 8	34420	0.0	33909	3.2
A	V 75	. 5	74	. 3	75	5.5	74	. 4

MONTHLY SUMMARY (JUL)
MN 75.5 73.6 75.5 73.6
MX 75.5 75.5 75.5 75.6
SM 38052.0 37522.0 38052.0 37540.6
AV 75.5 74.4 75.5 74.5

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1

rs_5		= HOURL	-report	
	3EXTPER	3EXTPER		3 INTPER
	THERMOST	ZONE TEMP	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	F	F	F	F
	( 7)	( 6)	( 7)	( 6)
	LY SUMMARY	Y (AUG)		
MN	71.5	72.5	71.5	72.5
MX	75.5 35282.0	75.5	75.5	75.6
SM				
AV	75.4	74.2	75.4	74.3
MONTH	LY SUMMAR			
MIN	71.5	71.4 74.9	71.5	71.8
MX	75.5	74.9	75.5	75.0
SM	35194.0	34609.1	35222.0	34646.9
AV	75.2	74.0	75.3	74.0
MONTH	LY SUMMAR 71.5 75.5	Y (OCT)		
MN	71.5	67.4	71.5	68.4
MX	75.5	89.9	75.5	92.3
SM	37412.0	38115.0	37536.0	38482.9
AV				
MONTH	LY SUMMAR	Y (NOV)		
MN	71.5	72.7	71.5	72.7
MX	75.5	90.0	75.5	90.7
SM	35128.0	36304.9	35228.0	36532.8
AV	73.2			
MONTH	LY SUMMAR	Y (DEC)		
MIN	71.5	72.6	71.5	72.6
MX	75 5	79 5	75 5	20.7
SM	35366.0	36051.9	35406.0	36115.1
AV			72.0	
YBARL	Y SUMMARY			
MIN	71.5	67.4	71.5	67.8
MX	75.5	67.4 102.3	75.5	103.7
	423312.0		423832.0	432374.6
AV				

ENTECH ENGINEBRING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_6 = HOURLY-REPORT PAGE 1- 1

K	MUING,	rn.	15003	4150.
RS_6		= HOURL	-REPORT	
MMDDHH	4BXTPER	4EXTPER	4INTPER	4INTPER
	THERMOST	ZONE	THERMOST SETPOINT F	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P	F	F	F
	(7)	(6)	(7)	(6)
MONTH	LY SUMMAR	Y (JAN)		
MN	71.5 71.5 71.5 35178.0	71.8	71.5	71.8
MX	71.5	73.4	71.5	73.4
SM	35178.0	35849.9	35178.0	35855.1
AV	71.5	72.9	71.5	72.9
•••	,		,	
MONTH	LY SUMMAR	Y (FRB)		
MN	71 5	71.9	71.5	71.9
MY	71.5 75.5 31754.0	73.8	75.5	74 2
CM	31754 0	32359 5	31766 0	32368.8
AV	71.5	72.9	71.5	72.9
AV	/1.5	12.3	/1.5	,2.,
MONTHE	T.V CITMMAN	V (MND)		
MONTH	DI SUPPAR	1 (MAR) 72 E	71 5	72.5 77.5
LEV.	71.3	72.5	75.5	77.5
CM	73543 0	24226.2	73.3 22570 A	24248 0
an.	71.7	34220.3	71 7	34248.9 73.2
AV	/1./	/3.1	/1./	13.2
MONETER	TT CTRACT	ומתגי ע		
MUNIA	LI SUMMAR	1 (APR)	71 5	72.7
MD	71.3	74.7	71.3	91 5
PIA.	73.3	25042 1	24566 0	72.7 91.5 36040.7
AV	34514.0	35644.1	34300.0	30040.7
AV	13.1	/6.0	73.9	77.0
MONTH	LY SUMMAR	v /www1		
MONTH	LI SUMMAR	.I (MAI)	71 5	64 3
1474	71.3	04.0	71.3	64.3 99.5
MA.	, ,,,,,,	70.4	75.5	37855.1
AV.	74.2	76.6	74.2	76.9
AV	/4.2	/6.0	74.2	76.3
MONETE		V (TINI)		
MONTH	LLI SUMMAR	. 72 2	71 5	72 2
MV	72.3	75.5	75.5	75 7
C.P.	73.3	22024 0	74312 0	72.2 75.7 33847.2
30	7 75 7	74 7	75 2	74.2
Av	15.4	. 14.2	/3.2	/4.2
MONTH	ILY SUMMAR	v (anna		
MO	71 5	71 0	71 5	73.1
ME	75.5	75.0	75.5	73.1 75.6 37505.3
CA.	38036 0	37484 3	38040 0	37505.3
AV.	7 75 5	74 4	75.5	74.4
A	. , , , , ,		,,,,	

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_6 = HOURLY-REPORT PAGE 2- 1

4EXTPER 4EXTPER 4INTPER 4INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP F ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (AUG) 71.1 75.4 MN 71.5 71.5 71.3 75.5 MX 75.5 75.6 SM 35130.0 34658.8 35154.0 34689.6 MONTHLY SUMMARY (SEP) MN 71.5 69.3 MX 75.5 74.8 71.5 75.5 71.5 69.7 SM 34906.0 34459.6 34994.0 34506.8 ΑV 74.6 73.6 74.8 73.7 MONTHLY SUMMARY (OCT) 62.4 71.5 71.5 63.5 
 MN
 71.5
 62.4
 71.5
 63.5

 MX
 75.5
 82.7
 75.5
 83.9

 SM
 36836.0
 36782.7
 36960.0
 37049.1
 AV 73.1 73.0 73.3 73.5 MONTHLY SUMMARY (NOV) 71.5 72.6 75.5 85.0 71.5 75.5 72.6 MN 85.4 SM 34612.0 35485.2 34648.0 35525.7 72.2 73.9 AV 72.1 74.0 MONTHLY SUMMARY (DEC) 71.5 72.5 76.3 71.5 75.5 MN 72.5 75.5 77.0 MX SM 35226.0 35889.2 35246.0 35903.3 AV 71.6 72.9 71.6 YEARLY SUMMARY 71.5 62.4 71.5 MX 75.5 98.4 75.5 99.5 SM 420512.0 424543.3 420972.0 425395.6 74.0 73.3 73.4 74.2

	ENTECH	ENGINEE	RING	B	ZDOE -	BLITE	SOFTWAR	B DEVE	SLOPMENT	INC	DO FTMOACO	B-2.1	D 7	7/ 2/1	1996	16:2	4:42	SDL	RUN	1
RE	ADING,	PA	19603	4	130.05	FT. M	HTUOMNO	- MYEF	CENTER	i, nj	FTMOAC0	- SIM	MCA	H20 C	DNLY	W/OA SC	HD1			
RS_7		- HOURL	Y-REPORT															PAGE	1-	1
MMDDHH	2MIDL	2MIDL	3MIDL	3MIDL																
			THERMOST																	
			F																	
	(7)	( 6)	( 7)	( 6	)															
MONTHI	Y SUMMAR	y (Jan)																		
MIN	71.5	73.3	71.5	73.	3															
MX	75.5	75.3	75.5	75.	4															
SM			36534.0																	
AV	74.1	73.8	74.3	73.	8															
MONTH	Y SUMMAR	Y (FEB)																		
MN	71.5	73.2	71.5	73.	2															
MX	75.5	74.9	75.5	75.	0															
SM	32970.0	32778.8	33002.0	32791.	7															
AV	74.3	73.8	74.3	73.	9															
MONTHI	Y SUMMAR	Y (MAR)																		
MN	71.5	73.4	71.5	73.	4															
MX	75.5	76.5	75.5	76.	6															
SM	35190.0	34672.1	35214.0	34685.	3															
AV	75.2	74.1	75.2	74.	1															
MONTH	LY SUMMAR	Y (APR)																		
MN			71.5	73.	5															
MX																				
SM	35326.0	35059.6	35326.0		4															
AV	75.5	74.9	75.5	74.	9															
MONTH	LY SUMMAR	Y (MAY)																		
MN			75.5	73.	8															
MX	75.5	95.1	. 75.5	95.	1															
SM	37146.0	37408.5	37146.0	37411.	0															
AV	75.5	76.0	75.5	76.	0															
MONTH	LY SUMMAR																			
MN	75.5		75.5																	
MX																				
SM	34428.0		34428.0																	
VA	75.5	75.0	75.5	75.	0															
		X (JUL)																		
MN			75.5																	
MX																				
			38052.0																	
AV	75.5	75.1	L 75.5	75.	1															

		ENGINEE	RING		RZDOR -	RPLL	S SUPTWAL	KE DEV	PLOPMEN	1 INC		DOR	-2.1D	7	/ 2/	1336	. 10	: 24:4.	2 SDL	KUI	M 3
	•	PA	19603		4130.05	FT. I	HTUOMNOOTH	- MYE	R CENTE	R, NJ	FTMO	ACO -	SIM	MCA	H20	ONLY	W/OA	SCHD1		_	
S_7			Y-REPORT																PAGE		
		2MIDL		3MIDL																	
	THERMOST																				
	SETPOINT	TEMP	SETPOINT	TEMP																	
	F	F	F	F																	
	( 7)	( 6)	(7)	(	6)																
MONTH	LY SUMMARY	(AUG)																			
MIN			75.5	74	. 2																
MX																					
	35334.0																				
AV		75.0																			
MONTH	LY SUMMARY	(SRP)																			
MN			75.5	74	. 0																
MX																					
	35334.0																				
AV		74.8																			
MONTH	LY SUMMARY	7 (OCT)																			
MN			75.5	73	. 6																
MX		77.8																			
	38052.0																				
AV																					
MONTH	LY SUMMARY	/ (NOV)																			
MN			71.5	73	.4																
MX					. 4																
	36204.0				.0																
AV		74.5																			
MONTH	LY SUMMAR	Y (DEC)																			
MN			71.5	7:	.3																
MX																					
	36554.0																				
AV					.0																
YRAPI	Y SUMMARY																				
MN			71.5	7	. 2																
MX					.1																
	431044.0																				
			75.2																		

NG BZDOB - BLITE SOFTWARE DEVELOPMENT INC 19603 4130.05 FT MONDOWN ..... DOR-2.1D 7/2/1996 16:24:42 SDL RUN 1 ENTECH ENGINEERING READING, PA 19603 = HOURLY-REPORT 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL OINTEXTP OINTEXTP MMDDHH 4MIDL 4MIDL BR THERMOST ZONE THERMOST ZONE THERMOST DOWN SET POINT TEMP SET SETPOINT TEMP ---(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) 71.5 MN 71.5 72.8 73.0 75.5 MX 75.5 74.2 74.7 SM 35234.0 35984.3 35338.0 36065.6 71.6 73.1 MONTHLY SUMMARY (PEB) MN 71.5 72.7 71.5 72.9 75.5 75.5 73.8 MX SM 31802.0 32483.2 31978.0 32558.7 72.0 AV 71.6 73.2 MONTHLY SUMMARY (MAR) MN 71.5 73.1 MX 75.5 75.6 71.5 75.5 75.9 SM 33654.0 34320.2 34014.0 34409.7 72.7 73.5 ΑV 71.9 73.3 MONTHLY SUMMARY (APR) MN 71.5 73.1 MX 75.5 79.0 71.5 73.3

75.5

75.5

75.5

75.5

75.5

75.5

75.5 74.3 75.5 76.1

SM 34670.0 34669.6 35038.0 34865.2

SM 36922.0 37044.4 37134.0 37482.6 75.3

SM 34428.0 34062.1 34428.0 34270.7

MX 75.5 75.7 75.5 76.1 SM 38052.0 37725.7 38052.0 37963.9

74.7

MONTHLY SUMMARY (MAY) MN 71.5 71.1 MX 75.5 93.6

75.0 MONTHLY SUMMARY (JUN)

MIN 75.5 73.8 MX 75.5 75.8

75.5 74.0

75.5

MONTHLY SUMMARY (JUL)

AV

ΑV

80.0

96.4

75.2

74.5

PAGB 1- 1

RE	RADING,	PA	19603	4130
RS 8		= HOURLY	-REPORT	
				OINTEXTP
			RR	KR
	THERMOST SETPOINT	ZONE	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P	F	P	P
	( 7)	(6)	( 7)	( 6)
	Y SUMMARY	(AUG)	75.5	74.3
MN	75.5	73.6	75.5 75.5	76.2
MX	75.5 35334.0	75.9	75.5	76.2
AV	75.5	74.7	75.5	15.2
MONTH	LY SUMMARY 71.5 75.5	(SEP)		
MN	71.5	72.6	75.5	73.9
MX	75.5	75.4	75.5	75.9
SM	35298.0	34828.8	35334.0	35090.8
AV	75.4	74.4	75.5	75.0
MONTH	TY SUMMARY 71.5 75.5 37560.0	(OCT)		
MN	71.5	68.6	71.5	72.5
MX	75.5	78.8	75.5	82.6
SM	37560.0	37208.1	38020.0	37663.4
AV	74.5	73.8	75.4	74.7
MONTH	ים געשווים עי	y (MOV)		
MN	LY SUMMARY 71.5 75.5	73 1	71 5	73 2
MY	75.5	80.4	75.5	81.4
CM.	34772.0	35340 7	35460.0	35499.5
AV	72.4	73.6	73.9	74.0
1401	r v ornasa	r (D7C)		
MONTH	LY SUMMAR 71.5 75.5	72.0	71 5	72 1
PLIN	71.5	72.5	71.3	73.1
MA.	75.5	74.4	75.5	75.9
AV.	35334.0 71.8	73.2	72.2	73.4
AV	/1.8	/3.2	12.2	/3.4
YEARL	Y SUMMARY			
MN	71.5	68.6	71.5	72.5
MX	75.5	93.6	75.5	96.4
	423060.0			
AV	73.8	74.0	74.2	74.5

ENTECH ENGINEERING
READING, PA 19603
REPORT- PV-A EQUIPMENT SIZES

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 PDL RUN 1
4130.05 FT. MONMOUTH - MYER CENTER, MJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOL
WEATHER FILE- NEWARK, NJ

	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER	NUMBER
BQUIPMBNT	SIZE INSTD (MBTU/H) AVAIL	SIZE INSTD (MBTU/H) AVAIL	SIZE INSTD (MBTU/H) AVAIL	SIZE INSTD (MBTU/H) AVAIL	SIZE INSTD (MBTU/H) AVAIL	SIZE INSTD (MBTU/H) AVAIL
HW-BOILER	4.648 1 1					
HERM-CENT-CHLR	7.800 1 1					
COOLING-TWR	2.379 4 4					

ENTECH ENGINEERING EZODE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ

RLEC THERMAL TOTAL ANNUAL FALSE HOURS AT PERCENT PART LOAD RATIO LOAD LOAD USED USED HOURS (MBTU) (MBTU) (MBTU) BOUIPMENT 0 -- 10 -- 20 -- 30 -- 40 -- 50 -- 60 -- 70 -- 80 -- 90 -- 100 - 110+ 236.0 5321.7 142 5088 3673.8 0.0 HW-BOILER 2736 641 642 475 338 1 142 64 33 642 475 338 2736 641 HERM-CENT-CHLR 1064 805 487 340 337 117 11 0 Q 0 3672 8597.3 0.0 1960.2 0.0 511 805 487 340 337 117 11

106

100

188

3672 10557.6

0.0

814.0

0.0

126

149

HOT LOOP CIRCULATION PUMP BLECTRICAL USE = 174.8 MBTU COLD LOOP CIRCULATION PUMP BLECTRICAL USE = 907.9 MBTU

328

328

161

118

## NOTES TO TABLE

COOLING-TWR

566

566

1229

1229

601

601

- 1) THE FIRST PART LOAD ENTRY FOR BACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED

HRATING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD -----HW-BOILER 3673.8 100.0 -----LOAD SATISFIED TOTAL LOAD ON PLANT 3673.8 100.0 3673.8 COOLING LOADS MBTU SUPPLIED PCT OF TOTAL LOAD COOLING LOADS HERM-CENT-CHLR 8597.3 100.0 ********** LOAD SATISFIED 8597.3 100.0 TOTAL LOAD ON PLANT 8597.3 ELECTRICAL LOADS MBTU SUPPLIED PCT OF TOTAL LOAD BLECTRICITY 23097.8 LOAD SATISFIED 23097.8 100.0 TOTAL LOAD ON PLANT 23097.5

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 85.F

SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISPIED (MBTU)	TOTAL OVERLOAD (MBTU)	PRAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3673.8	3673.8	0.000	0.000	0
COOLING LOADS	8597.3	8597.3	0.000	0.000	0
ELECTRICAL LOADS	23097.5	23097.8	0.000	0.000	0

ENTECH ENGINEERING BZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

BQUIPMENT	AVG OPER RATIO	MAX LOAD (MBTU)	MON DAY HR	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZE OPER (MBTU) HRS	SIZR OPER (MBTU) HRS	SIZE OPER (MBTU) HRS
HW-BOILER	0.155	4.648	2 20 3 8 18 15	4.648 5088 7.800 3672				
COOLING-TWR	0.302	8.375	8 18 15	2.379 14688				

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 PDL RUN 1
RRADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ

ENERGY TYPE IN SITE METU - BLECTRICITY FUEL-OIL CATEGORY OF USE SPACE HEAT 235.96 5321.68 2774.24 SPACE COOL 0.00 5307.58 HVAC AUX 0.00 DOM HOT WIR 0.00 0.00 0.00 0.00 AUX SOLAR LIGHTS 10258.56 0.00 VERT TRANS 0.00 0.00 MISC EQUIP 4521.40 0.00 TOTAL 23097.73 5321.68

TOTAL SITE ENERGY 28419.50 MBTU 86.2 KBTU/SQFT-YR GROSS-AREA 86.2 KBTU/SQFT-YR NET-AREA TOTAL SOURCE ENERGY 74684.37 MBTU 226.6 KBTU/SQFT-YR GROSS-AREA 226.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 1.8
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE ELECTRICITY AND/OR FUEL USED TO GENERATE ELECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/ 2/1996 16:24:42 PDL RUN 1 READING. 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 PA - HOURLY-REPORT RP 1 PAGE 1- 1 MMDDHH HERM-CEN HERM-CEN HERM-CEN HERM-CEN COOLING- COOLING-COOLING-COOLING-T-CHLR T-CHLR T-CHLR T-CHLR TWR TWR TWR TWR BLECTRIC ENTERING LOAD LEAVING WATER RANGE PAN PUMP USE COND TEM COLD TEM FLOWRATE BLEC RLRC BTU/HR BTU/HR GAL/MIN R BTU/HR BTU/HR ----( 1) ----(3) ----(12) ---- (13) ----( 8) ---- (10) ----(20) ---- (21) MONTHLY SUMMARY (JAN) ٥. 0. 0.0 0.0 0.0 0.0 0. ο. MX Ο. 0.0 0.0 0.0 0.0 0. 0. SM 0. 0. 0.0 0.0 0.0 0.0 ٥. 0. AV 0. 0. 0.0 0.0 0.0 0.0 ٥. ٥. MONTHLY SUMMARY (FEB) MN 0. ٥. 0.0 0.0 0.0 0.0 ٥. MX ٥. ٥. 0.0 0.0 0.0 0.0 ٥. SM 0. ٥. 0.0 0.0 0.0 0.0 ٥. ٥. ΑV ٥. Ο. 0.0 0.0 0.0 0.0 ٥. 0. MONTHLY SUMMARY (MAR) MN 0. 0. 0.0 0.0 0.0 0.0 ٥. 0. ΜX ٥. ٥. 0.0 0.0 0.0 0.0 ٥. 0. SM 0. ٥. 0.0 0.0 0.0 0.0 0. ο. A۷ ٥. 0.0 0.0 Ο. ٥. MONTHLY SUMMARY (APR) MN ٥. Ο. 0.0 0.0 0.0 0.0 Ο. 0. o. 0.0 0.0 0.0 0.0 ٥. ο. SM 0. 0. 0.0 0.0 0.0 0.0 ΑV 0. 0. 0.0 0.0 0.0 0.0 ٥. MONTHLY SUMMARY (MAY) MN Ο. ٥. 0.0 0.0 0.0 0.0 0. 4734563. 885751. ΜX 76.9 55.5 1950.0 5.8 140410. 90465. SM 204805856. 69268752. 16615.6 13621.8 491400.0 301.9 29106086. 22797268. 416272. 140790. 33.8 0.6 59159. 46336. MONTHLY SUMMARY (JUN) 289191. 64.5 53.9 1950.0 0.5 106147. 90465. ΜX 4389327. 853501. 80.0 55.4 1950.0 5.5 140410. 90465. 815711680 206956576 31425.9 SM 24815.9 889200.1 1086.1 59935544. 41252200. ΑV 1788841. 453852. 68.9 1950.0 54.4 2.4 131438. 90465. MONTHLY SUMMARY (JUL) MN 341720. 161215. 65.0 53.9 1950 0 0.6 114031. 90465. MX 4326828. 847222. 79.0 55.4 1950.0 5.4 140410.

982800.1

1950.0

1445.9

2.9

68744472.

136398.

27505.7

54.6

90465.

90465.

45594536.

ENTECH ENGINEERING

1108698368.

2199798.

ΑV

261142528.

518140.

35685.2

70.8

ENTECH ENGINEERING 19603 READING,

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 7/ 2/1996 16:24:42 PDL RUN 1

4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 PAGE 2- 1 RP_1 - HOURLY-REPORT _____ HERM-CEN HERM-CEN HERM-CEN COOLING- COOLING-COOLING-COOLING-HERM-CEN T-CHLR T-CHLR T-CHLR TWR TWR TWR TWR T-CHLR WATER RANGE BLECTRIC RNTERING LEAVING PAN PUMP COLD TEM FLOWRATE BLBC BLBC IISR COND TEM BTU/HR BTU/HR GAL/MIN BTU/HR BTU/HR ----( 1) ----(3) ---- (12) ----(13) -----(8) -----(10) ---- (20) ---- (21) MONTHLY SUMMARY (AUG) 136381. 64.9 53.9 1950.0 108731. 90465. 289191 MN 4591155. 926070. 83.0 55.5 1950.0 5.7 140410. 90465. МX 897506496. 223031584. 33148.2 25491.5 912600.1 1187.4 62609704 42337780 133781. 90465. A٧ 1917749. 476563. 70.8 54.5 1950.0 2.5 MONTHLY SUMMARY (SEP) 289191. 65.0 53.9 1950.0 0.5 106147 90465 MN 3365087. 676081. 78.0 55.0 1950.0 4.2 140410. 90465 42337784. 32075.1 25371.7 912600.1 808.1 59208216. SM 577829248. 172632304. 1950.0 1.7 ΑV 1234678. 368872. 68.5 54.2 MONTHLY SUMMARY (OCT) 0.0 MN 0. ο. 0.0 0.0 0.0 1950.0 3.3 140212. 90465. 2556596. 554104. 70.0 54.7 MX 49044764. 16451.0 13588.0 491400.0 188.9 28122556. 22797272, SM 114714480. ΑV 227608. 97311. 32.6 27.0 975.0 0.4 55799. 45233. MONTHLY SUMMARY (NOV) 0.0 0.0 0.0 0.0 ο. ٥. ٥. MN 0. 0.0 0.0 0.0 0.0 0. 0. 0.0 ο. 0. SM 0. 0. 0.0 0.0 0.0 ٥. 0.0 0.0 Ο. 0.0 0.0 ΑV ٥. MONTHLY SUMMARY (DEC) 0.0 ٥. ٥. 0.0 ٥. 0.0 0.0 ο. 0.0 0.0 0.0 0.0 0. MX 0. 0.0 0.0 0. 0. Ο. ٥. SM 0. ٥. 0.0 0.0 0.0 0.0 ο. ٥. YRARLY SUMMARY ٥. 0.0 0.0 0.0 0.0 α. ο 90465. 1950.0 140410. ΜX 4734563. 926070. 83.0 55.5 5.8 4680000.5 5018.3 307726592. 217116832. 982076544. 165401.0 130394.6 SM 3719266048. 28.8 22.7 815.9 0.9 53648. 37852. AV 648408. 171213.

EZDOE - ELITE SOFTWARE DEVELOPMENT INC ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 READING, PA PAGE 1- 1 - HOURLY-REPORT RP 2 HW-BOILE HW-BOILE HW-BOILE HW-BOILE MMDDHH R R · CAPACITY BLECTRIC FURL LOAD RUNNING USB IISR BTU/HR BTU/HR BTU/HR BTU/HR ----(4) ---- (7) ----( 1) ----(3) MONTHLY SUMMARY (JAN) 14277. 254516. 4648277. 162239. MN 4169796. 102262. 5092058. 4648277. MX 2286952448. 823017984. 45530488. 1153649792. 4648278. 2344817. 92542. AV 1672801. MONTHLY SUMMARY (FEB) 4648277. 24165. 15403. 1356. 5577933. 4648277. 102262. MX 4648277. 38768240. 1003392000. 2063835008. 719964032. SM 1621541. 87316. 2259892. 4648277. ΑV MONTHLY SUMMARY (MAR) 1356. 24165. 4648277. 15403. MN 2533265. 102262. 3359322. 4648277. MX 693906112. 2175393536. 464817216. 33754812. 4648277. 72126. 1482705. AV 993199. MONTHLY SUMMARY (APR) 1356. 24165. 15403. 102262. 2670332. 4648277. 1909794. MX SM 144827648. 11859749. 222878928. 2175393792. 4648278. ΑV 309461. 25341. 476237. MONTHLY SUMMARY (MAY) ٥. Ο. 348861. 30700. 547284. 4648277. ΜX 15838597. 1393796. 24847180. 1115586560. SM 2267452. AV 32192. 2833. 50502. MONTHLY SUMMARY (JUN) 0. ٥. ο. Ο. ΜX Ο. ٥. 0. ٥. SM 0. AV ο. 0. ٥. MONTHLY SUMMARY (JUL) 0. 0. 0. MN ٥. 0. O.

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Ο.

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DOR-2.1D 7/2/1996

16:24:42 PDL RUN 1

REAL	DING, PA		EZDOB - ELIT 4130.05 FT.	TE SOFTWARE DEVELO MONMOUTH - MYER	OPMENT INC	DOR-	-2.1D SIM MC	7/ 2/1996 A H20 ONL)	16:24: W/OA SCHD	42 PDI 1	RUN 1
RP_2		RLY-REPORT								PAGE	2- 1
	HW-BOILE		HW-BOILE								
	R	R	R	R							
	LOAD			CAPACITY							
	_	USE	USB	RUNNING							
	BTU/HR	BTU/HR	BTU/HR	BTU/HR							
	( 1)	(3)	(4)	(7)							
MONTHLY	SUMMARY (AUG)										
MN	0.	0.	0.	0.							
MX	0.	0.	0.	0.							
SM	0.	0.	0.	٥.							
AV	0.	0.	0.	0.							
MONTHLY	SUMMARY (SEP)										
MN	0.	0.	0.	0.							
MX	0.		0.	0.							
SM	0.	0.	0.	0.							
AV	0.	0.	0.	0.							
MONTHLY	SUMMARY (OCT)	)									
MN	0.	0.	0.	0. 4648277.							
MX	901315.	79316.	1413960.								
SM	27343130.	2406196.	42895200.						•		
AV	54252.	4774.	85110.	2324139.							
MONTHLY	SUMMARY (NOV)	)									
MN	15403.	1356.	24165.	4648277.							
MX	2355515.	102262.	3164516. 484560256.	4648277.							
SM	319433728.	24739036.	484560256.	2231172864.							
VA	665487.	51540.	1009501.	4648277.							
MONTHLY	SUMMARY (DEC	)									
MIN		1356.	24165.			•					
		102262.									
SM	727572096.										
AV	1478805.	87215.	2105878.	4648278.							
YEARLY	SUMMARY										
MN	0.	0.	0. 5577933.	0.							
MX	4648277.			4648277.							
SM	3242814464.	201361920.	4662221312.	15506653184.							
ΑV	565344.	35105.	812800.	2703392.							

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 7/2/1996 16:24:42 EDL RUN 1 RRADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- EV-B COST OF FUELS AND UTILITIES

PIXED FIXED UNIFORM COST ESCLA-MIN RATE ENERGY LIMIT MNTHLY MNTHLY ASSIGN-ASSIGN-ASSIGN-KNERGY COST MNTHLY /UNIT ATION CHARGE /UNIT CHARG2 SCHEDULE CHARGE1 CHARGE2 SOURCE UNIT (BTU) (\$) RATE (\$) (\$) (\$) (\$) (U-NAME) (U-NAME) (U-NAME)

FUEL-OIL 138690.00 0.5900 5.000 0.00 1000000.000 0.00 0.00

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	energy Charge (\$)	MRASURED DEMAND (KW)	BILLING DEMAND (KN)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
	(0 101-0)							
JAN	4.0.00000000000000000000000000000000000	744	492626.	35419.79	1461.	1461.	0.00	
	40fpkkwh Bonpkdmhtg	252	299363.	0.00	1461.	1461.	12523.13	
	RONSKOMHIG	232	255505.	****				47942.91
FEB								
	40PPKKWH	672	443469.	31885.46	1461.	1461.	0.00	
	BONPKDMHTG	228	269721.	0.00	1461.	1461.	12523.13	***** 50
								44408.58
MAR			508232.	36541.90	1461.	1461.	0.00	
	40FPKKWH	744 276	325960.	0.00	1461.	1461.	12519.40	
	BONPKDMHTG	4/0	323900.	5.50				49061.30
APR								
	40FPKKWH	720	471791.	33921.80	1451.	1451.	0.00	
	RONPROMHTG	252	296752.	0.00	1451.	1451.	12431.73	
								46353.53
MAY				40819.94	1896.	1896.	0.00	
	40FPKKWH	744	567732. 336181.	0.00	1896.	1896.	16244.95	
	BONPKDMHTG	252	330101.	0.00	2050.	1050.	10211.55	57064.89
JUN								
0014	40FPKKWH	456	286522.	20600.94	1087.	1087.	0.00	
	BONPKDMCL	264	409245.	0.00	1959.	1959.	18555.89	
	BONPKKWH	264	409245.	32780.50	1959.	1959.	0.00	
								71937.33
JUL			205245	23377.89	1072.	1072.	0.00	
	40FPKKWH	504 240	325145. 377259.	0.00	1959.	1959.	18549.63	
	EONPRDMCL EONPRKWH	240	377259.	30218.49	1959.	1959.	0.00	
	BONPREME	240	5172331					72146.03
AUG								
	40FPKKWH	468	297670.	21402.45	1095.	1095.	0.00	
	BONPKDMCL	276	433414.	0.00	1960.	1960.	18565.50	
	BONDKKWH	276	433414.	34716.47	1960.	1960.	0.00	74684.4
								74004.44
SEP	40FPKKWH	468	281089.	20210.29	1064.	1064.	0.00	
	BONPKDMCL	252	377386.	0.00	1903.	1903.	18022.92	
	BONPKKWH	252	377386.	30228.59	1903.	1903.	0.00	
								68461.80
ocr			F7001F	38747.98	1809.	1809.	0.00	
	40FPKKWH	744	538915. 309509.	38747.98	1809.	1809.	15506.68	
	BONPKOMHTG	240	303303.	0.00	2007.	2005.	22000.00	54254.6
NOV								
-10 .	40FPKKWH	720	465642.	33479.64	1460.	1460.	0.00	
	BONPKOMHTG	240	283059.	0.00	1460.	1460.	12515.08	45004 5
								45994.7

	BLECTRIC	FUEL-OIL	
MONTH	UNIT=	UNIT=	
	3413.00	138690.00	
jan			
RNERGY CONSUMPTION (UNIT/MO)	492626.		
PEAK DEMAND (UNIT/HR)	1461.	37.	
TOTAL COST (\$)	47942.91	5835.19	
FEB			
ENERGY CONSUMPTION (UNIT/MO)	443469.	7948.	
PRAK DEMAND (UNIT/HR)	1461.	40.	
TOTAL COST (\$)	44408.58	4689.36	
MAR			
ENERGY CONSUMPTION (UNIT/MO)	508232.	5637.	
PEAK DEMAND (UNIT/HR)	1461.	24	
TOTAL COST (\$)	49061.30		
APR	45002.50	5525.55	
	471701	1790.	
ENERGY CONSUMPTION (UNIT/MO)		1/50.	
PEAK DEMAND (UNIT/HR)	1451.	19. 1056.25	
TOTAL COST (\$)	46353.53	1056.25	
MAY			
ENERGY CONSUMPTION (UNIT/MO)			
PEAK DEMAND (UNIT/HR)	1896.	4.	
TOTAL COST (\$)	57064.89	131.38	
JUN			
ENERGY CONSUMPTION (UNIT/MO)		0.	
PEAK DEMAND (UNIT/HR)	1959.	0.	
TOTAL COST (\$)	71937.33	0.00	
JUL			
ENERGY CONSUMPTION (UNIT/MO)	702404.	0.	
PEAK DEMAND (UNIT/HR)	1959.	0.	
TOTAL COST (\$)	72146.01	0.00	
AUG			
ENERGY CONSUMPTION (UNIT/MO)	731084.	0.	
PRAK DEMAND (UNIT/HR)	1960.	0.	•
TOTAL COST (\$)	74684.42	0.00	
SEP			
ENERGY CONSUMPTION (UNIT/MO)	658474.	0.	
PEAK DEMAND (UNIT/HR)	1903.	0.	
TOTAL COST (\$)	68461.80	0.00	
OCT	00-04-00	5.50	
ENERGY CONSUMPTION (UNIT/MO)	538915.	364.	
	1809.		
PEAK DEMAND (UNIT/HR)	54254.66		
TOTAL COST (\$)	54254.66	214./1	
NOV	465643	2062	
ENERGY CONSUMPTION (UNIT/MO)			
PEAK DEMAND (UNIT/HR)	1460.	23.	
TOTAL COST (\$)	45994.72	2278.46	
DRC	407.445	0.550	
ENERGY CONSUMPTION (UNIT/MO)			
PRAK DEMAND (UNIT/HR)	1461.		
TOTAL COST (\$)	47858.02	5108.19	
TOTAL			
ENERGY CONSUMPTION (UNIT/YR)	6767581.		
PEAK DEMAND (UNIT/HR)	1960.	40.	
TOTAL COST (\$)	680168.25	22639.20	

EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 7/2/1996 16:24:42 EDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING 19603 READING, PA REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES ------CONTINUSD------CONSUMPTION ENERGY MRASURED BILLING DEMAND TOTAL CHARGE-CHARGE CHARGES ASSIGNMENT LENGTH BY C-A CHARGE DEMAND DEMAND MONTH (\$) (KW) (XXI) (\$) (\$) (U-NAME) (HR/MO) (KWH) -----DEC 491445. 35334.89 1461. 1461. 0.00 40FPKKWH 12523.13 BONPKDMHTG 252 298950. 0.00 1461. 1461. 47858.02 6767581. 499687.00 180481.17 680168.25 TOTAL

READ		ERING 19603 LY-REPORT	EZDOE - EL 4130.05 FT	ITE SOFTWARE DEVEL . MONMOUTH - MYER	OPMENT INC DOE-2.1D 6/27/1996 16:27:41 SDL RUN 1 CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 PAGE 1- 1
MDDHH	1SMCAHUS ZR	2SPERFC	3SPERFC	4SPERFC	
	SUPPLY	SUPPLY	SUPPLY	SUPPLY	
	BLECTRIC	BLECTRIC	BLECTRIC	BLECTRIC	
	KM	KW	KW	KW	
	(49)	(49)	(49)	(49)	MCA System Res ON-PEAK
W.THT.V	SUMMARY (JAN)				MCA SUSTEM ICE
MN	30.066	1.523	1.523	1.786	, , _, ,
MX	30.066	1.523	1.523	1.786	
SM	7576.734	383.846	383.846	450.173	$\wedge$ $\Omega$
AV	30.066	1.523	1.523	1.786	( ), \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
AV	30.000	1.525	2.525		
MONTHLY	SUMMARY (FEB)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	6855.140	347.290	347.290	407.299	
AV	30.066	1.523	1.523	1.786	
MONTHER V	SUMMARY (MAR)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
MA. SM	8298.327	420.403	420.403	493.046	
AV	30.066	1.523	1.523	1.786	
AV	30.000	1.323	2.525	2	
MONTHLY	SUMMARY (APR)				
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	
SM	7576.734	383.846	383.846	450.173	
AV	30.066	1.523	1.523	1.786	
MONTHT.V	SUMMARY (MAY)				•
MN	30.066	1.523	1.523	1.786	
MX	30.066	1.523	1.523	1.786	•
SM	7576.734	383.846	383.846	450.173	
AV	30.066	1.523	1.523	1.786	
MONTHER 12	SUMMARY (JUN)				
	30.066	1.523	1.523	1.786	
MIN	30.066	1.523	1.523	1.786	
MX	7937.531	402.125	402.125	471.610	
SM AV	7937.531 30.066	1.523	1.523	1.786	
	SUMMARY (JUL)		1.523	1.786	
MN	30.066	1.523 1.523	1.523	1.786	
MX	30.066			428.736	
SM	7215.937	365.568	365.568	1.786	
ΑV	30.066	1.523	1.523	1./86	

EZDOR - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 6/27/1996 16:27:41 SDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 ENTECH ENGINEERING READING, PA 19603 * HOURLY-REPORT 19603 PAGB 2- 1 RS_1 1SMCARUS 2SPERFC 3SPRRFC 4SPERFC ZR SUPPLY SUPPLY SUPPLY SUPPLY BLECTRIC RLECTRIC BLECTRIC BLECTRIC KW KW ---- (49) ---- (49) ---- (49) ---- (49) MONTHLY SUMMARY (AUG) 30.066 1.523 1.523 1.786 MX 30.066 1.523 1.523 1.786 420.403 8298 327 420.403 493.046 SM AV 1.523 1.523 30.066 1.786 MONTHLY SUMMARY (SEP) 1.523 1.523 1.523 1.523 1.786 MN 30.066 30.066 1.786 MX 7576.734 383.846 383.846 450.173 ΑV 30.066 1.523 1.523 1.786 MONTHLY SUMMARY (OCT) 30.066 1.523 1.523 1.786 MX 30.066 1.523 1.523 1.786 7215.937 365.568 365.568 428.736 SM 30.066 1.523 1.523 1.786 AΨ MONTHLY SUMMARY (NOV) 30.066 1.523 1.523 1.786 MN MX 30.066 1.523 1.523 1.786 7215.937 365.568 365.568 428.736 AV 30.066 1.523 1.523 1.786 MONTHLY SUMMARY (DEC) 30.066 1.523 MN 1.523 1.786 30.066 1.786 ΜX 1.523 1.523 7576.734 383.846 383.846 450.173 SM ΑV 30.066 1.523 1.523 1.786 YEARLY SUMMARY 30.066 1.523 1.523 1.786 1.523 4606.157 1.523 4606.157 MX 30.066 1.786 5402.074 90920.805 SM AV 1.786 30.066 1.523

BZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 SDL RUN 1 ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 READING, PA PAGE 1- 1 - HOURLY-REPORT RS_2 SSZF4MID OSMCAHUS MMDDHH SSZF2MID SSFZ3MID SUPPLY SUPPLY SUPPLY SUPPLY BLECTRIC BLECTRIC BLECTRIC BLECTRIC KN ΚW KW --- (49) ---- (49) ---- (49) ---- (49) MONTHLY SUMMARY (JAN) 17.562 29.469 23.912 29.253 17.562 29.253 29.469 MX 23.912 6025.824 7371.756 7426.086 4425.524 SM 29.253 29.469 17.562 AV MONTHLY SUMMARY (FEB) 29.253 29.469 17.562 23.912 MN 29.253 29.469 17.562 ΜX 6718.840 4004.046 5451.936 6669.684 29.253 29.469 AV 23.912 MONTHLY SUMMARY (MAR) 17.562 29.469 29,253 23.912 29.253 29.469 17.562 23.912 MX 8073.829 8133.333 4847.002 SM 17.562 AV 23.912 29,253 29.469 MONTHLY SUMMARY (APR) 29.469 29.469 17.562 23.912 29.253 29.253 7371.756 17.562 MX 23.912 7426.086 4425.524 6025.824 SM 29.253 29.469 17.562 23.912 ΑV MONTHLY SUMMARY (MAY) 23.912 29.253 29.469 17.562 MN 23.912 29.253 7371.756 29.469 7426.086 17.562 4425.524 SM 6025.824 29.469 17.562 23.912 ΑV MONTHLY SUMMARY (JUN) 29.253 29.469 17.562 MN 23.912 29.253 29.469 17.562 MX 7779.709 4636.263 6312.768 7722.792 29.253 29.469 23.912 ΑV MONTHLY SUMMARY (JUL) 29,253 29.469 17.562 23.912 23.912 MN

29.253

29,253

7020.720

MX

SM

ΑV

5738.880

23.912

29.469

29.469

7072.463

17.562

17.562

4214.785

READING, 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 RS_2 - HOURLY-REPORT SSFZ3MID SSZF2MID SSZF4MID OSMCAHUS ZR SUPPLY SUPPLY SUPPLY SUPPLY BLECTRIC RESCURIC BLECTRIC BLECTRIC KW KW KW KW ---- (49) --- (49) ---- (49) ---- (49) MONTHLY SUMMARY (AUG) 23.912 29.253 MN 29.469 17.562 23.912 29.253 29.469 SM 6599.711 8073.829 8133.333 4847.002 29.253 ΑV 23.912 29.469 17.562 MONTHLY SUMMARY (SEP) MN 23.912 29.253 29.469 17.562 29.469 7426.086 MX 23.912 29.253 17.562 7371.756 SM 6025.824 4425.524 23.912 29.253 29.469 17.562 MONTHLY SUMMARY (OCT) 29.253 MN 23.912 29.469 17.562 23.912 29.253 29.469 SM 5738.880 7020.720 7072.463 4214.785 29.253 AV 23.912 29,469 17.562 MONTHLY SUMMARY (NOV) 29.253 MN 23.912 29,469 17.562 ΜX 29.253 23.912 29.469 17.562 5738.880 7020.720 7072.463 ΑV 23.912 29.253 29,469 17.562 MONTHLY SUMMARY (DEC) MN 23.912 29.253 29.469 17.562 MX 23.912 29.253 29.469 7426.086 17.562 4425.524 SM 7371.756 6025.824 AV 29.253 29.469 YEARLY SUMMARY 23.912 29.253 29.469 17.562 MX 23.912 29.253 29.469 17.562 72309.883 88461.070 89113.039 SM 53106.289 AV 23.912 29.253 29.469 17.562

BZDOB - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 6/27/1996

16:27:41 SDL RUN 1

ENTECH ENGINEERING

MODDHH 1EXTPER 1EXTPER 1INTPER 1INTPER

THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP

-	(7)-	( 6)	( 7)	( 6)
MONTHLY	SUMMARY	(JAN)		
MN	SUMMARY 71.5	73.5	71.5	73.4
MX	75.5	75.8	75.5	76.1
SM	19022.0	18843.1	19018.0	18842.1
AV	75.5	74.8	75.5	74.8
MONTHLY	SUMMARY	(FEB)		
MN	75.5	73.5	71.5	73.2
MY	75 5	75.9	75.5	76.4
SM	17214.0	17088.2	17206.0	17084.3
AV	75.5	74.9	75.5	74.9
MONTHL	Y SUMMARY 75.5	(MAR)		
MN	75.5	74.0	75.5	74.1
	75.5			
SM	20838.0	20815.9	20838.0	20835.3
VA	75.5	75.4	75.5	75.5
MONTHL	Y SUMMARY 75.5	(APR)		
MN	75.5	74.2	75.5	74.3
MX	75.5	88.3	75.5	87.9
SM	19026.0	19448.4	19026.0	19467.6
VA	75.5	77.2	75.5	77.3
MONTHL	Y SUMMARY	(MAY)		75.2 95.3 19775.9
MN	75.5	74.8	75.5	75.2
MX	75.5	95.9	75.5	95.3
SM	19026.0	19697.4	19026.0	19775.9
AV	75.5	78.2	75.5	78.5
MONTHI	Y SUMMARY	(JUN)		75.7 77.7 20280.0
MIN	75.5	75.5	75.5	75.7
MX	75.5	77.1	75.5	77.7
SM	19932.0	20168.5	19932.0	20280.0
AV	75.5	76.4	75.5	76.8

MN 75.5 75.6 75.5 75.8 MX 75.5 77.1 75.5 77.6 SM 18120.0 18354.5 18120.0 18442.9 AV 75.5 76.5 76.8

MONTHLY SUMMARY (JUL)

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

= HOURLY-REPORT DOR-2.1D 6/27/1996 16:27:41 SDL RUN 1 RS_3 1EXTPER 1EXTPER 1INTPER 1INTPER THERMOST ZONE THERMOST ZONE ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (AUG) MN 75.5 75.3 75.5 75.6 MX 75.5 77.1 75.5 77.5 77.1 SM 20838.0 21107.7 20838.0 21169.1 76.5 75.5 A٧ 75.5 MONTHLY SUMMARY (SEP) 75. 77.6 MN 75.5 75.1 75.5 75.1 MX 75.5 77.0 75.5 77.6 SM 19026.0 19208.4 19026.0 19241.1 AV 75.5 76.2 75.5 MONTHLY SUMMARY (OCT) MN 75.5 74.5 75.5 MX 75.5 82.6 75.5 74.2 81.9 SM 18120.0 18330.3 18120.0 18335.0 75.5 MONTHLY SUMMARY (NOV) MN 75.5 74.2 75.5 MX 75.5 88.5 75.5 SM 18120.0 18257.2 18120.0 18289.7 75.5 75.5 76.1 AV MONTHLY SUMMARY (DEC) MIN 75.5 73.8 75.5 MX 75.5 77.7 75.5 73.6 77.5 SM 19026.0 18889.4 19026.0 18914.2 AV 75.5 75.0 75.5 YEARLY SUMMARY MN 71.5 73.5 71.5 73.2 MX 75.5 95.9 75.5 95.3 SM 228308.0 230209.0 228296.0 230677.3

76.1 75.5

75.5

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ING EZDOB - BLITE SOFTWARE DEVELOPMENT INC 19603 4130.05 PT MONNOTON DOR-2.1D 6/27/1996 ENTECH ENGINEERING 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHO1 READING. PA - HOURLY-REPORT RS 4 MMDDHH 2EXTPER 2EXTPER 2INTPER 2INTPER THERMOST ZONE THERMOST ZONE SETPOINT TEMP SETPOINT TEMP ----(7) ----(6) ----(7) ----(6) MONTHLY SUMMARY (JAN) MN 71.5 72.3 72.3 75.5 78.8 75.5 79.6 SM 18514.0 18715.6 18550.0 18762.4 73.6 ΑV 73.5 74.3 MONTHLY SUMMARY (FEB) MN 71.5 72.9 71.5 72.9 MX 75.5 79.1 75.5 79.8 SM 16898.0 17067.2 16914.0 17123.0 75.1 ΑV 74.1 74.9 MONTHLY SUMMARY (MAR) MN 71.5 72.8 MX 75.5 85.3 71.5 72.8 75.5 85.3 86.2 SM 20594.0 21122.0 20622.0 21202.6 ΑV 74.6 76.5 74.7 76.8

MONTHLY SUMMARY (MAY) 71.5 71.3 75.5 104.4

MX 75.5 100.4 75.5 101.6 SM 18978.0 21348.4 18978.0 21513.0

MONTHLY SUMMARY (APR)

75.3

75.4

AV

MN MX

AV

71.5 73.1

71.4 71.5 75.5 105.1

73.1

85.4

71.5

75.5

SM 18998.0 20768.4 19002.0 20857.1 75.4 82.8 82.4

MONTHLY SUMMARY (JUN) 74.5 76.9 75.5 74.4 MN 75.5 75.5 76.9 MX 75.5 SM 19932.0 19970.9 19932.0 19964.5 AV 75.5 75.6 75.5 75.6

MONTHLY SUMMARY (JUL) 74.5 75.5 75.5 74.5 MX 75.5 76.8 75.5 76.7 SM 18120.0 18184.2 18120.0 18177.9 75.5 75.8 75.5

16:27:41 SDL RUN 1

PAGE 1- 1

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_4 = HOURLY-REPORT PAGE 2- 1

RE	ADING,	PA	19603	4130.
RS_4		= HOURLY		
			2INTPER	
4	SETPOINT	TEMP	THERMOST SETPOINT P	ZONE TEMP F
	( 7)	( 6)	( 7)	( 6)
MONTHL	Y SUMMARY	(AUG)		
MIN	75.5	74.4	75.5	74.4
MX	75.5	76.9	75.5 75.5	76.9
SM	20838.0	20909.4	20838.0	20910.2
AV	75.5	75.8	75.5	75.8
MONTHL	Y SUMMARY	(SEP)	75.5 75.5	
MIN	71.5	73.3	75.5	73.6
MX	75.5	76.3	75.5	76.4
SM	19022.0	18965.5	19026.0	18977.9
AV	75.5	75.3	75.5	75.3
MONTHL	Y SUMMAR	(OCT)		
MIN	71.5	70.4	71.5 75.5	71.3
MX	75.5	92.5	75.5	94.6
SM	18030.0	10320.0	10104.0	19103.0
AV	75.4	79.0	75.4	79.6
MONTHI	Y SUMMAR	Y (NOV)		
MN	71.5	73.0	71.5 75.5 17984.0	73.0
MX	75.5	94.2	75.5	95.0
SM	17964.0	19000.7	17984.0	19138.4
AV	74.8	79.2	74.9	79.7
MONTHI	Y SUMMAR	Y (DEC)		72.8 83.7
MN	71.5	72.7	71.5	72.8
MX	75.5	82.4	75.5	83.7
SM	18522.0	18774.5	18566.0	18819.8
AV	73.5	74.5	73.7	74.7
YEARL	SUMMARY			
MIN	71.5	70.4	71.5	71.3
				105.1
				234550.7
AV	74.9	77.3	74.9	77.6

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_5 = HOURLY-REPORT PAGE 1- 1

MMDDHH 3EXTPER 3EXTPER 3INTPER 3INTPER

	3 EXTPER	3EXTPER	3 INTPER	
	THERMOST	ZONE TEMP	THERMOST	ZONE
	SETPOINT	TRMP	SETPOINT	TEMP
	P	F	F	P
	•	-	-	_
	(7)	( 6)	( 7)	( 6)
MONTHI	Y SUMMAR	(JAN)		
MN	71.5	72.3	71.5	72.3
MX	75.5	78.8	75.5	79.6
SM	18514.0	72.3 78.8 18715.6	18550.0	18762.4
AV	73.5	74.3	73.6	74.5
MONTH	LY SUMMAR	Y (FEB)		
MN	71.5	72.9	71.5	72.9
MX	75.5	72.9 79.1 17067.2	75.5	79.8
SM	16898.0	17067.2	16914.0	17123.0
AV	74.1	74.9	74.2	75.1
		· (147.71)		
MONTH	LY SUMMAR	Y (MAR) 72.8 85.3 21121.9		a
MN	71.5	/2.8	71.5	72.8
MX	75.5	85.3	75.5	86.2
SM	20594.0	21121.9	20622.0	21202.6
AV	74.6	76.5	74.7	76.8
MONTH	LY SUMMAR	Y (APR)		
MN	71.5	73.1 100.4	71.5	73.1
MX	75.5	100.4	75.5	101.6
SM	18978.0	21348.4	18978.0	21513.0
AV			75.3	85.4
MONTH	LY SUMMAR	Y (MAY)		
	71.5	Y (MAY) 71.3 104.4	71.5	71.4
MX	75.5	104.4	75.5	105.1
SM	18998.0	20768.4	19002.0	20857.1
AV	75.4	82.4	75.4	82.8
MONTH	GAMMIR V.T	Y (JUN)		
MN	75 5	74.5	75.5	74.4
MY	75.5	74.5 76.9	75.5	76.9
SM	19932 0	19970 9	19932.0	19964.5
AV	75.5	19970.9 75.6	75.5	75.6
MONTH	LI SUMMAR	Y (JUL) 74.5 76.8	75 6	74 5
ian.	73.3	76.3	73.3	76.7
MX.	10170 0	10104 7	19120 0	10177 0
SM AV	10120.0	18184.3 75.8	10120.0	701//.3
AV	/5.5	/5.8	/3.5	/3./

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 SDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1
RS_5 = HOURLY-REPORT PAGE 2- 1

3EXTPER 3EXTPER 3INTPER 3INTPER

	3EXTPER	3EXTPER	3 INTPER	3INTPER
	THERMOST	ZONE	THERMOST	ZONE
	SETPOINT	TEMP	SETPOINT	TEMP
	P	F	F	F
	(7)	(6)	( 7)	(6)
			• • •	, .,
MONTH	Y SUMMAR	Y (AUG)		
MOS	75.5	74.4	75.5 75.5 20838.0	74.4
MX	75.5	76.9	75.5	76.9
SM	20838.0	20909.4	20838.0	20910.2
AΛ	75.5	75.8	75.5	75.8
MONTH	LY SUMMAR	Y (SEP)		
MIST	71.5	73.3	75.5	73.6
MX	75.5	76.3	75.5 19026.0	76.4
SM	19022.0	18965.5	19026.0	18977.9
AV	75.5	75.3	75.5	75.3
MONPHER	TV CTRAIND	v (00m)		
MONTA	21 SUMMAR	70 4	71 5	71.3 94.6
MA	75.5	97.5	75.5	94.6
PLA.	19095 0	18950 5	18304.0	19103.8
AV	75.4	79.0	75.4	19103.8 79.6
		•		
MONTH	LY SUMMAR	Y (NOV)		
MN	71.5	73.0	71.5	73.0 95.0
MX	75.5	94.2	75.5	95.0
SM	17964.0	19000.6	17984.0	19138.4
AV	74.8	79.2	74.9	79.7
MONTH	LY SUMMAR	Y (DEC)		72.8 83.7
MN	71.9	72.7	71.5	72.8
MX	75.5	82.4	75.5	83.7
SM	18522.0	18774.4	18566.0	18819.8
AV		74.5	73.7	74.7
VRADI	Y SUMMARY	r		
	71.5	70.4	71.5	71.3
м	75.5	104.4	75.5	105.1
		233777.3	226636.0	234550.7
Z.		77.3	74.9	77.6

RS_6	ADING,	PA = HOURL	RING 19603 Y-RBPORT	41.	30.05	PT. M	ONMOUTH	- NYE	R CENTER	, NJ		- SI	IM MC	A H20	ONLY	W/OA	SCHD1	DACE	
MMDDHH	4EXTPER	4EXTPER	4INTPER	4 INTPER															 -
	SETPOINT	TEMP	THERMOST SETPOINT F	TEMP					•										
	( 7)	( 6)	(7)	( 6)															
MONTHL	Y SUMMARY	(JAN)																	
MIN	71.5		71.5	72.2															
MX	75.5		75.5																
SM			18218.0																
AV	72.1		72.3																
MONTHI	Y SUMMARY	(FEB)																	
MN	71.5	72.7	71.5	72.7															
MX	75.5	76.5	75.5	77.2															
			16618.0	16832.4															
AV	72.7	73.7	72.9	73.8															
	Y SUMMARY																		
MN				72.7															
MX		82.8																	
AV	73.8		20378.0 73.8																
MONTHL	Y SUMMARY	(APR)																	
MN	71.5	73.0	71.5	73.0															
MX	75.5	94.4	75.5	95.2															
SM	18910.0	20293.5	18910.0	20371.9															
VA	75.0	80.5	75.0	80.8															
	Y SUMMARY																		
MN	71.5										•								
MX	75.5																		
SM AV	75.3	20157.6 80.0	18966.0 75.3																
MONTHI	Y SUMMARY	r (JUNI)																	
MN	75.5	74.1	75.5	74 0															
MX	75.5																		
SM			19932.0																
AV	75.5		75.5																
MONTHL	Y SUMMARY	(JUL)																	
MN	75.5	74.3	75.5	74.3															
MX	75.5			76.7															
			18120.0																
AV	75.5	75.7	75.5	75.7															

	EADING,	rn.	13003	4130.	- ELITE SOFTWARE 05 FT. MONMOUTH -	MYER CENTER,	NJ	FIMOACO -	8-2.1D - SIM M	6/27 CA H20	ONLY	16: W/OA S	27:41 CHD1	SDL	RU	N
s_6 		- MOORI	I-REPORT		***************************************									PAGE	2-	
	4BXTPER	4BXTPER	4 INTPER	4 INTPER												
	THERMOST		THERMOST													
	SETPOINT		SETPOINT													
	F.	F	P	P												
	( 7)	( 6)	(7)	( 6)												
MONTH	LY SUMMARY	(AUG)														
MN	75.5	73.8	75.5	73.8												
MX	75.5	76.9														
SM	20838.0															
AV																
MONTH	LY SUMMARY	(SEP)														
MN		71.1	71.5	71.5												
MX	75.5	76.3														
SM	19010.0															
AV		75.0														
MONTH	LY SUMMARY	(007)														
MN		65.1	71.5	66.0												
MX		86.0														
SM	17988.0															
AV		76.5		76.9												
MONTH	LY SUMMARY	(NOV)														
MN			71.5	72.9												
MX		88.6														
SM	17768.0	18376.6														
AV		76.6														
HTMON	LY SUMMARY	(DBC)														
MN	71.5	72.6	71.5	72.7				•								
MX		80.1	75.5	80.9												
SM	18210.0	18560.2	18242.0	18580.1												
			72.4													
YEARL	Y SUMMARY															
MN	71.5	65.1	71.5	66.0												
MX	75.5	101.1														
SM	224860.0	229624.2														
AV	74.4	75.9	74.4	76.1												

RI RS_7	RADING,	ENGINEE PA = HOURL	RING 19603 Y-RBPORT		EZDOE - 4130.05	ELITE FT. M	SOFTWAR ONMOUTH	- WARE	CENTER	r inc	FTMOAC	DOR-	-2.1D SIM M	6/: CAH:	27/199 20 ONT	96 LY 1	16 4/0a	: 27 : 4: SCHD1	1 SDI PAGE	
MMDDHH		2MIDL	3MIDL	3MIDL																 
	THERMOST	ZONE	THERMOST	ZONE																
	SETPOINT	TEMP	SETPOINT	TEMP																
	F	F	F	P																
	( 7)	( 6)	( 7)	(	6)															
MONTH	LY SUMMARY	(JAN)																		
MN			75.5	74	4.5															
MX					5.4															
SM	19026.0																			
AV		75.6			5.6															
MONTH	LY SUMMARY	(FRB)																		
MN	75.5	74.4	75.5	74	1.5															
MX	75.5	76.5			5.5															
SM	17214.0	17249.8																		
AV	75.5	75.7			5.7															
MONTHI	Y SUMMARY	(MAR)																		
MN		75.0	75.5	75	5.0															
MX	75.5	80.5			0.6															
SM			20838.0																	
AV	75.5	76.0			5.0															
MONTHI	Y SUMMARY	(APR)																		
MN	75.5	75.0	75.5	75	5.0															
MX		88.7			3.7															
SM	19026.0	19587.6																		
AV	75.5	77. <i>1</i>			7.8															
MONTHI	Y SUMMARY	(YAM)																		
MIN		75.3	75.5	79	5.4						•									
MX	75.5	96.2	75.5	96	. 2															
SM	19026.0	19801.2	19026.0	19804	1.6															
AV	75.5	78.6	75.5	78	3.6															
MONTHI	Y SUMMARY	(JUN)																		
MN	75.5	75.6	75.5	75	. 6															
MX	75.5	77.1	75.5	77	.1															
SM	19932.0	20210.1	19932.0																	
AV	75.5	76.6	75.5	76	. 6															
MONTHI	Y SUMMARY	(ஸ்.)																		
MN	75.5	75.7	75.5	75	. 7															
MX	75.5	77.1	75.5	77	.1															
	18120.0	18388.3	18120.0	18389	.0															
AV	75.5	76.6	75.5	76	. 6															

		entech Eading,	PA ENGINEE	RING 19603		EZDOE -	- RLI	TE SO	FIWARI OUTH	- MYE	BLOPME R CENT	NT INC	: ;	DO TIMOACO	OB-2.:	ID M MC	6/2 A H2	7/199 0 ONL	6 Y W/O	16:2° A SC	. SDL		
RS_	, 			Y-RBPORT																	PAGE	2-	1
		2MIDL	2MIDL	3MIDL	3MIDL																 		
		THERMOST	ZONE	THERMOST	ZONB																		
		SETPOINT	TEMP	SETPOINT	TEMP																		
		P	F	F	F				•														
		( 7)	( 6)	( 7)	(	6)																	
MO	NTHI	LY SUMMAR	Y (AUG)																				
	MN			75.5	75	5.6																	
	MX					7.2																	
	SM			20838.0																			
	ΑV					5.6																	
MO.		LY SUMMAR																					
	MN																						
	MX																						
		19026.0																					
	ΑV	75.5	76.4	75.5	76	5.4																	
MO	NTH	LY SUMMAR	Y (OCT)																				
	MN	75.5	75.1	75.5	75	5.2																	
	MX	75.5	83.0			3.0																	
	SM	18120.0	18439.8	18120.0	18445	5.7																	
	AV																						
м	APPER S	LY SUMMARY	V /310171																				
	MM			75.5	7,																		
	MX					0.7																	
		18120.0																					
	AV					5.9																	
		,,,,	,	73.3																			
MO	NTH	LY SUMMAR	Y (DEC)																				
	MN	75.5	74.6	75.5	74	. 7								•									
	MX	75.5	78.6	75.5	78	3.7																	
	SM	19026.0	19079.9	19026.0	19089	9.6																	
	ΑV	75.5	75.7	75.5	79	5.8																	
VR	ART.	Y SUMMARY																					
•••	MN			75.5	74	. 5																	
	MX					5.2																	
		228312.0																					
	AV					5.6																	
	~1	,,,,	,0.0	,,,,	,,																		

RS_8	e READI	ENTECH ING,	PA	RING 19603 Y-REPORT		05	ELI'	TE SO MONM	FIWARI OUTH	B DI	EVEL C	OPMENT SENTER	INC , NJ	P	TMOA	DO1	B-2 - S	.1D IM M	6, CA 1	/27 H20	/199 ONL	6 Y W	10 1/0A	5 : 27 : SCHI	)1	SDI PAGE	
MMDDH			4MIDL		OINTEXTP																						 
				BR.	KR																						
	THE	TPMOST	ZONE	THERMOST																							
				SETPOINT																							
				P																							
	•		-	-	-																						
		(7)	( 6)	( 7)	( 6)																						
MONT	THLY S	SUMMARY	(JAN)																								
M	IN	71.5	73.1	71.5	73.2																						
M	£Χ	75.5	75.2	75.5	75.1																						
5	SM 18	8786.0	18645.6	18802.0	18651.6																						
7	v	74.5	74.0	74.6	74.0																						
MONT	THLY S	SUMMARS	(FEB)																								
	ON .	71.5			73.3																						
	4X	75.5																									
					16921.6																						
	V	75.0			74.2																						
MONT	THLY :	SUMMAR	Y (MAR)																								
1	4N	71.5	73.4	71.5	73.4																						
	4X	75.5	78.6	75.5	79.0																						
	SM 2	0822.0	20633.2	20814.0	20641.6																						
,	AV.	75.4	74.8	75.4	74.8																						
MON	THLY :	SUMMAR'	Y (APR)																								
1	MIN	75.5			73.6																						
	MIX	75.5																									
					19329.1																						
i	AV	75.5	76.6	75.5	76.7																						
			Y (MAY)																								
	MIN	75.5																									
	MIX	75.5																									
					19652.2																						
•	AV	75.5	77.6	5 75.5	78.0																						
			Y (JUN)																								
	MN	75.5			75.3																						
	MX	75.5																									
					20134.5																						
	AV	75.5	76.3	2 75.5	76.3																						
			Y (JUL)																								
	MN	75.5			75.5																						
	MX	75.5																									
					18336.9																						
	ΑV	75.5	76.	3 75.5	76.4																						

RS_8		= HOURL	Y-REPORT	BZDOB 4130.						PAGE	
	4MIDL	4MIDL	OINTEXTP	OINTEXTP	 	 	 	 	 	 	 
			BR	BR.							
	THERMOST		THERMOST								
			SETPOINT								
	F	F	P	F							
	(7)	( 6)	( 7)	( 6)							
MONTI	ILY SUMMAR	Y (AUG)									
M	75.5	74.9	75.5	75.2							
M	75.5	77.0	75.5	77.1							
SI	1 20838.0	21047.8	20838.0	21089.5							
A.	7 75.5	76.3	75.5	76.4							
MONTE	ILY SUMMARY	Y (SEP)									
M			75.5	74.9							
M											
SP	1 19026.0	19108.1	19026.0	19166.4							
A.	75.5	75.8	75.5	76.1							
MONTE	ILY SUMMARY	(OCT)									
M	71.5	71.8	75.5	74.2							
M2	75.5	82.1									
SI	18112.0	18176.5	18120.0	18255.3							
AT.	75.5	75.7	75.5	76.1							
MONTE	ILY SUMMARY	(NOV)									
M	71.5	73.5	75.5	73.5							
M)		88.0									
	18116.0										
A.	75.5	75.4	75.5	75.5							
MONTE	ILY SUMMARY	(DEC)									
M	71.5	73.3	71.5	73.3			•				
M	75.5	77.0	75.5	77.2							
	18886.0										
A\	74.9	74.2	75.1	74.2							
YRARI	Y SUMMARY										
M	71.5	71.8	71.5	73.2							
MD	75.5	95.4	75.5	97.7							
	227792.0										
/A	75.3	75.6	75.3	75.7							

ENTECH ENGINEERING READING, PA 19603 REPORT- PV-A EQUIPMENT SIZES

EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 WRATHER FILE- NEWARK, NJ

BQUIPMENT	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (METU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL	NUMBER SIZE INSTD (MBTU/H) AVAIL
HW-BOILER	4.648 1 1					
HERM-CENT-CHLR	7.800 1 1					
COOLING-TWR	2.379 4 4					

BZDOB - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41
4130.05 FT. MONMOUTH - MYER CENTER, MJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 16:27:41 PDL RUN 1 ENTECH ENGINEERING READING, PA 19603 4130
REPORT- PS-C EQUIPMENT PART LOAD OPERATION WEATHER FILE- NEWARK, NJ

BOUIPMENT			1	HOURS AT	PERC	ent pa	RT LOF	LD RAT	IO			TOTAL HOURS	ANNUAL LOAD (MBTU)	FALSE LOAD (MBTU)	BLEC USED (MBTU)	THERMAL USED (MBTU)
	0 10	20	3	0 40	50	60	70	8	0 90	10	0 - 110+					
HW-BOILER	2736	641	642	475	338	142	64	33	12	4	1	5088	3673.8	0.0	236.0	5321.7
	2736	641	642	475	338	142	64	33	12	4	1					
HERM-CENT-CHLR	1064	511	805	487	340	337	117	11	0	0	0	3672	8597.3	0.0	1960.2	0.0
	1064	511	805	487	340	337	117	11	0	0	0					
COOLING-TWR	1229	566	601	328	161	118	149	126	106	100	188	3672	10557.6	0.0	814.0	0.0
	1229	566	601	328	161	118	149	126	106	100	188					

HOT LOOP CIRCULATION PUMP ELECTRICAL USE = 174.8 MBTU COLD LOOP CIRCULATION PUMP ELECTRICAL USE =

- NOTES TO TABLE

  1) THE FIRST PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE HOURLY OPERATING CAPACITY
- 2) THE SECOND PART LOAD ENTRY FOR EACH PIECE OF EQUIPMENT IS THE HOURLY LOAD DIVIDED BY THE TOTAL INSTALLED CAPACITY

ENTECH ENGINEERING READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE - NEWARK, NJ

EZDOR - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

HRATING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HW-BOILER	3673.8	100.0
LOAD SATISFIED TOTAL LOAD ON PLANT	3673.8 3673.8	100.0
COOLING LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
HERM-CENT-CHLR	8597.3	100.0
LOAD SATISPIED TOTAL LOAD ON PLANT	8597.3 8597.3	100.0
BLECTRICAL LOADS	MBTU SUPPLIED	PCT OF TOTAL LOAD
RLECTRICITY	23097.8	100.0
LOAD SATISFIRD TOTAL LOAD ON PLANT	23097.8 23097.5	100.0

TOWER ABOVE DESIGN TEMPERATURE OF 85.F 1 HOURS MAXIMUM TOWER EXIT TEMPERATURE = 85.F

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-D PLANT LOADS SATISFIED WEATHER FILE- NEWARK, NJ
(CONTINUED)

## SUMMARY OF LOADS MET

TYPE OF LOAD	TOTAL LOAD (MBTU)	LOAD SATISFIED (MBTU)	TOTAL OVERLOAD (MBTU)	PEAK OVERLOAD (MBTU)	HOURS OVERLOADED
HEATING LOADS	3673.8	3673.8	0.000	0.000	0
COOLING LOADS	8597.3	8597.3	0.000	0.000	0
ELECTRICAL LOADS	23097.5	23097.8	0.000	0.000	0

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHOL
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

			-									
	AVG	MAX	М	ON								
EQUIPMENT	OPER	LOAD		DA			OPER		OPER	SIZE OPER	SIZE OPER	SIZE OPER
	RATIO	(MBTU)			HR	(MBTU)	HRS	(MBTU)	HRS	(mbtu) hrs	(mbtu) hrs	(MBTU) HRS
			-									
HW-BOILER	0.155	4.648		2 20	3	4.648	5088					
HERM-CENT-CHLR	0.300	6.956		8 18	15	7.800	3672					
COOLING-TWR	0.302	8.375		8 18	15	2.379	14688					

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

REPORT- BEPS ESTIMATED BUILDING ENERGY PERFORMANCE WEATHER FILE- NEWARK, NJ 16:27:41 PDL RUN 1

ENERGY TYPE IN SITE MBTU - ELECTRICITY FUEL-OR	IL.
CATEGORY OF USE	
SPACE HEAT 235.96 5321	1.68
SPACE COOL 2774.24	0.00
HVAC AUX 5307.58	0.00
DOM HOT WTR 0.00	0.00
AUX SOLAR 0.00	0.00
LIGHTS 10258.56	0.00
VERT TRANS 0.00	0.00
MISC EQUIP 4521.40	0.00
TOTAL 23097.73 532:	1.68

TOTAL SITE ENERGY 28419.50 MBTU 86.2 KBTU/SQFT-YR GROSS-AREA TOTAL SOURCE ENERGY 74684.37 MBTU 226.6 KBTU/SQFT-YR GROSS-AREA

86.2 KBTU/SQFT-YR NET-AREA 226.6 KBTU/SQFT-YR NET-AREA

PERCENT OF HOURS ANY SYSTEM ZONE OUTSIDE OF THROTTLING RANGE = 1.8
PERCENT OF HOURS ANY PLANT LOAD NOT SATISFIED = 0.0

NOTE BLECTRICITY AND/OR FUEL USED TO GENERATE BLECTRICITY IS APPORTIONED BASED ON THE YEARLY DEMAND. ALL OTHER ENERGY TYPES ARE APPORTIONED HOURLY.

DOB-2.1D 6/27/1996 16:27:41 PDL RUN 1 ENTECH ENGINEERING 4130.05 PT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHD1 19603 READING. PA PAGE 1- 1 RP_1 - HOURLY-REPORT MMDDHH HERM-CEN HERM-CEN HERM-CEN HERM-CEN COOLING-COOLING-COOLING-COOLING-T-CHI.R T-CHLR T-CHLR T-CHLP TWP TWO TWR TWP BLECTRIC ENTERING LEAVING WATER RANGE PUMP FAN LOAD ELEC USE COND TEM COLD TEM FLOWRATE BTU/HR BTU/HR GAL/MIN BTU/HR BTU/HR ----(3) ---- (12) ---- (13) ---- (21) ----( 8) ----(10) ---- (20) ----( 1) MONTHLY SUMMARY (JAN) ٥. ٥. 0.0 0.0 0.0 0.0 ٥. 0. 0.0 MX 0. ο. 0.0 0.0 0.0 0. 0. 0.0 0.0 0. ο. 0.0 0.0 0. SM 0. AV ٥. 0.0 0.0 ٥. Ο. MONTHLY SUMMARY (FEB) ٥. 0.0 0.0 0.0 0.0 0. ٥. 0. MN 0.0 0.0 0. 0.0 0.0 ٥. ٥. MX 0. ٥. 0.0 0.0 0.0 0.0 ο. 0. A۷ 0. ٥. 0.0 0.0 0.0 0.0 0. 0. MONTHLY SUMMARY (MAR) ٥. 0.0 0.0 0.0 0.0 σ. ο. ΜX ۵. ٥. 0.0 0.0 0.0 0.0 ο. ٥. 0.0 0.0 SM ٥. 0. 0.0 0.0 0. 0. AV ٥. 0.0 0.0 0.0 ο. ٥. ٥. 0.0 MONTHLY SUMMARY (APR) 0.0 0.0 0.0 0.0 ٥. 0. 0. MN 0. MX 0.0 SM ٥. ٥. 0.0 0.0 0.0 0.0 0. ٥. ΔV 0. 0. 0.0 0.0 0.0 0.0 σ. ۵. MONTHLY SUMMARY (MAY) 0.0 0.0 MN 0. ٥. 0.0 0.0 0. 0. 1179016. 79.9 1950.0 140410 90465. 6000451. 56.0 7.4 MX 78225192. 8926.2 7232.2 257400.0 466.2 17391252. 365947136. SM AV 1452171. 310417. 35.4 28.7 1021.4 1.9 69013. 47387. MONTHLY SUMMARY (JUN) 1015087. 387913. 64.5 54.1 1950.0 1.5 118667. 90465. 83.5 56.3 14612.5 8.6 1402.9 MX 6886767. 1408817. 1950.0 140410. 90465. 220363632. 19075.1 514800.0 36755700. 23882852. SM 1127043840. 72.3 55.4 1950.0 ΑV 4269106. MONTHELY STIMMARY (JUL) 413325. 54.2 1950.0 132391. 90465. 1311041. 1.9 MN 82.0 17724.1 6717490. 1356482. 56.3 1950.0 8.4 140410. 90465. SM 1135056768. 217876976. 13325.6 468000.0 1406.5 33679548. 21711684. 73.9 4729403. 907821. 55.5 1950.0 5.9 140331. 90465. AV

RZDOR - ELITE SOFTWARE DEVELOPMENT INC

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOR-2.1D 6/27/1996 16:27:41 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 - HOURLY-REPORT PAGE 2- 1 RP_1 HERM-CEN HERM-CEN HBRM-CEN HERM-CEN COOLING-COOLING-COOLING-COOLING-T-CHLR T-CHLR T-CHLR T-CHLR TWR TWR TWR TWR LOAD BLECTRIC RNTERING T.RAVTNC WATED DANCE PAN DITMO USE FLOWRATE ELEC COND TEM COLD TEM RLRC BTU/HR BTU/HR GAL/MIN BTU/HR BTU/HR ----(1) ----(3) ---- (12) ---- (13) ----( B) ---- (10) ---- (20) ---- (21) MONTHLY SUMMARY (AUG) 894222. 378119. 64.6 1950.0 124162. ΜX 6956289 1418906. 85.3 56.3 1950.0 8.7 140410. 90465. SM 1282126848 249123264. 20417.3 15315.6 538200.1 1592.3 38684532 24968436 ΑV 4645387. 902621. 74.0 55.5 1950.0 140161. 90465. 5.8 MONTHLY SUMMARY (SEP) 207365. MN 439230. 64.4 53.9 1950.0 0.7 109354. 90465 7.3 1166655. 81.9 1950.0 5895004 56.0 MX 140410. 90465. 166128400. 17338.8 13845.9 491400.0 1013.7 34057108. 802535552. 22797268. SM AV 3184665. 659240. 68.8 54.9 1950.0 135147. 90465. MONTHLY SUMMARY (OCT) 0.0 0.0 0.0 MN 0. 0. 0.0 ٥. Ο. 4687710. 866799. 70.5 55.5 1950.0 5.8 140410. 90465. SM 165302800. 46462144. 7049.0 5867.0 210600.0 226.0 13478706. 9770260. 193592. 29.4 24.4 688762. 877.5 56161. 40709. AV 0.9 MONTHLY SUMMARY (NOV) MN 0. ٥. 0.0 0.0 0.0 0.0 0. 0. 0.0 0.0 0.0 МX 0. ٥. 0.0 ٥. ٥. 0.0 0.0 0.0 ٥. SM 0. ٥. AV 0. ٥. 0.0 0.0 0.0 0.0 ٥. ٥. MONTHLY SUMMARY (DEC) ٥. ٥. 0.0 0.0 0.0 0.0 ٥. ٥. MX 0. 0. 0.0 0.0 0.0 0.0 0. ٥. SM ٥. ٥. 0.0 0.0 0.0 0.0 0. ٥. AV ٥. 0. 0.0 0.0 0.0 0.0 ٥. ٥. VEADILY STIMMARY 0.0 ٥. 0.0 0.0 0.0 0. 0.

140410.

57555.

174046832.

90465.

38053.

115071920.

8.7

2.0

6107.7

MN

ΜX

ΑV

6956289.

1613100.

4878012928.

1418906.

323472.

978179584.

85.3

29.9

90530.5

56.3

23.2

70198.9

1950.0

820.2

2480400.3

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/27/1996 16:27:41 PDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMOACO - SIM MCA H20 ONLY W/OA SCHD1

	DING, PA		4130.05 FT.	MONMOUTH - MYE	R CENTER,	NJ	PTMOACO	- SIM	MCA H2	ONLY	W/OA	SCHD1			
RP_2		OURLY-REPORT											PAGE	1-	1
MMDDHH	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE											
	R	R	R	R											
	LOAD	ELECTRIC	FUEL	CAPACITY											
		USE	USE	RUNNING											
	BTU/HR	BTU/HR	BTU/HR	BTU/HR											
	( 1)	( 3)	( 4)	(7)											
MONTHLY	SUMMARY (JAI	4)													
MN	15403	. 1356.	24165.												
MX	2978234	. 102262.	3841311.	4648277.											
SM	147403680			1171365760.											
AV	584935		865140.	4648277.											
MONTHLY	SUMMARY (FE	B)													
MN	15403		24165.	4648277.											
MX	1744793														
SM	63301488		98924976.												
AV	277638		433881.	4648277.											
Α,	277030	. 240,0.	455552.	40402//.											
MONTHLY	SUMMARY (MA														
MN	15403	. 1356.	24165.	4648277.											
MX	1683503	. 102262.	2416321.	4648277.											
SM	56578544	. 4792177.	87849896.	1282924416.											
AV	204995	. 17363.	318297.	4648277.											
MONTHLY	SUMMARY (AP	R)													
MIN	15403	. 1356.	24165.	4648277.											
MX	1024598	. 90165.	1607362.	4648277.											
SM	16198086		25411140.	1171365760.											
AV	64278		100838.	4648277.											
MONTHLY	SUMMARY (MA	Y)													
MIN	0		0.	0.			•								
MX	180877		283756.	4648277.											
SM	3847751		6036252.												
AV	15269	. 1344.	23953.	2213465.											
MONTHLY	SUMMARY (JU	N)													
MIN	0		0.	0.											
MX	ō		0.												
SM	ō		0.	0.											
AV	ō		0.	0.											
MONTHIA	SUMMARY (JU	L)													
MN	-	. 0.	0.	0.											
MIX	Ö		0.	0.											
SM	Ö		0.	0.											
AV	ō		ō.	0.											
	•		••	•.											

	ADING,			TE SOFTWARE DEVELOPME MONMOUTH - MYER CENT			96 16: LY W/OAS	PDL	RUN	1 1
RP_2		HOURLY-REPORT						PAGE	2-	1
	HW-BOILE	HW-BOILE	HW-BOILE	HW-BOILE	 	 		 		
	R	R	R DOLLL	R R		•				
	LOAD	BLECTRIC		CAPACITY						
	DOND	USB	USE	RUNNING						
	BTU/HR			BTU/HR						
	BIU/RK	BIQ/RK	B10/AR	BIU/ NR						
	( 1)	( 3)	( 4)	( 7)						
MONTHL	Y SUMMARY (A	DG)								
MN		0. 0.	0.	0.						
MX		0. 0.	0.	0.						
SM		0. 0.	o.	0.						
AV		0. 0.	o.	0.						
				• •						
MONTHL	Y SUMMARY (S	EP)								
MN		0. 0.	0.	0.						
MX		0. 0.	0.	0.						
SM		0. 0.	0.	0.						
AV		0. 0.	0.	0.						
MOSPITELL	Y SUMMARY (O	(Ala.)								
MN	I SUPPARI (O		0.	0.						
MX	21861									
SM	482882		7575341.	613572544.						
AV.	2012			2556552.						
AV	2012	0. 1//1.	31364.	2556552.						
MONTHL	Y SUMMARY (N	ov)								
MN	1540		24165.							
MEX	128627	7. 102262.	1965361.	4648277.						
SM	3257173		51032784.							
AV	13571	6. 11887.	212637.	4648277.						
MONTUL	Y SUMMARY (D	RC1								
MN	1540		24165	4649277	•					
MX	190043	1. 102262.	24165. 2659863.	4648277						
SM	10630020		164678864.							
AV	42182		653488.							
17713 D - 11	crness by									
YRARLY	SUMMARY		٥.	0.						
MX		4. 102262.								
SM	43103033		659524544.							
AV	14253		218097.	2693050.						
AV	74423	u. 11437.	41007/.	4073030.						

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- EV-B COST OF FUELS AND UTILITIES

ENERGY SOURCE	ENERGY UNIT (BTU)	UNIFORM COST /UNIT (\$)	COST ESCLA- ATION RATE	MIN MNTHLY CHARGE (\$)	RATE LIMIT /UNIT (\$)	FIXED MNTHLY CHARG1 (\$)	FIXED MNTHLY CHARG2 (\$)	ASSIGN- SCHEDULE (U-NAME)	ASSIGN- CHARGE1 (U-NAME)	ASSIGN- CHARGE2 (U-NAME)
ELECTRIC	3413.00	0.0000	5.000	0.00	1000000.000	0.00	0.00	YELEC1		
FURL-OIL	138690.00	0.5900	5.000	0.00	1000000.000	0.00	0.00			

MONTH	BLECTRIC UNIT=	FUEL-OIL UNIT=	
HTMOH	3413 AD	138690.00	
	3413.00	130030.00	
Jan			
ENERGY CONSUMPTION (UNIT/MO)	492626.	9890.	
PEAK DEMAND (UNIT/HR)	1461.	37.	
TOTAL COST (\$)	47942.91		
FEB			
ENERGY CONSUMPTION (UNIT/MO)	443469.	7948.	
PRAK DEMAND (UNIT/HR)	1461.	40.	
TOTAL COST (\$)	44408.58	4689.36	
MAR			
ENERGY CONSUMPTION (UNIT/MO)	508232.	5637.	
PEAK DEMAND (UNIT/HR)	1461.	24.	
TOTAL COST (\$)	49061.30	3325.66	
APR			,
ENERGY CONSUMPTION (UNIT/MO)	471791.	1790.	
PEAK DEMAND (UNIT/HR)	1451.	19.	
TOTAL COST (\$)	46353.53	1056.25	
MAY			
ENERGY CONSUMPTION (UNIT/MO)	567732.	223.	
PEAK DEMAND (UNIT/HR)	1896.	4.	
TOTAL COST (\$)	57064.89	131.38	
JUN			
ENERGY CONSUMPTION (UNIT/MO)	695767.	0.	
PRAK DEMAND (UNIT/HR)	1959.	0.	
TOTAL COST (\$)	71937.33	0.00	
JUL			
ENERGY CONSUMPTION (UNIT/MO)	702404.	0.	
PEAK DEMAND (UNIT/HR)	1959.	0.	
TOTAL COST (\$)	72146.01	0.00	
AUG			
ENERGY CONSUMPTION (UNIT/MO)	731084.	0.	<b>A</b>
PEAK DEMAND (UNIT/HR)	1960.	0.	·
TOTAL COST (\$)	74684.42	0.00	
SEP			
ENERGY CONSUMPTION (UNIT/MO)	658474.	0.	
PEAK DEMAND (UNIT/HR)	1903.	0.	
TOTAL COST (\$)	68461.80	0.00	
OCT			
ENERGY CONSUMPTION (UNIT/MO)	538915.	364.	
PEAK DEMAND (UNIT/HR)	1809.	10.	
TOTAL COST (\$)	54254.66	214.71	
NOV			
ENERGY CONSUMPTION (UNIT/MO)	465642.	3862.	•
PRAK DEMAND (UNIT/HR)	1460.	23.	
TOTAL COST (\$)	45994.72	2278.46	
DEC			
ENERGY CONSUMPTION (UNIT/MO)	491445.	8658.	
PEAK DEMAND (UNIT/HR)	1461.	28.	•
TOTAL COST (\$)	47858.02	5108.19	
TOTAL			
ENERGY CONSUMPTION (UNIT/YR)		38372.	
PEAK DEMAND (UNIT/HR)	1960.	40.	
TOTAL COST (\$)	680168.25	22639.20	

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 EDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MBASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
		•••••		•				
AN		744	492626.	35419.79	1461.	1461.	0.00	
	40FPKKWH BONPKDMHTG	252	492626. 299363.	0.00	1461.	1461.	12523.13	
	RONPROMITIG	252	233303.	0.00	1402.	1401.	12723.13	47942.91
FEB								
	40FPKKWH	672	443469.	31885.46	1461.	1461.	0.00	
	BONPKDMHTG	228	269721.	0.00	1461.	1461.	12523.13	
								44408.58
iar								
	40FPRKWH	744	508232.	36541.90	1461.	1461.	0.00	
	BONPRDMHTG	276	325960.	0.00	1461.	1461.	12519.40	49061.30
APR								45001.30
~ ~	40FPRKWH	720	471791.	33921.80	1451.	1451.	0.00	
	BONPRDMHTG	252	296752.	0.00	1451.	1451.	12431.73	
								46353.53
MAY								
	40FPKKWH	744	567732.	40819.94	1896.	1896.	0.00	
	BONPKDMHTG	252	336181.	0.00	1896.	1896.	16244.95	
								57064.8
JUN	40FPKKWH	456	286522.	20600.94	1087.	1087.	0.00	
	BONPKDMCL	264	409245.	0.00	1959.	1959.	18555.89	
	BONPKKWH	264	409245.	32780.50	1959.	1959.	0.00	
								71937.3
JUL								
	40FPKKWH	504	325145.	23377.89	1072.	1072.	0.00	
	BONPKDMCL	240	377259.	0.00 30218.49	1959. 1959.	• 1959. 1959.	18549.63 0.00	
	BONPKKWH	240	377259.	30210.49	A333.	4939.	0.00	72146.0
AUG								,,
	40FPKKWH	468	297670.	21402.45	1095.	1095.	0.00	
	BONPKDMCL	276	433414.	0.00	1960.	1960.	18565.50	
	BONPKKWH	276	433414.	34716.47	1960.	1960.	0.00	
								74684.4
SEP	40500000	468	281089.	20210.29	1064.	1064.	0.00	
	40FPKKWH BONPKDMCL	468 252	281089. 377386.	0.00	1903.	1903.	18022.92	
	BONPKKWH	252	377386.	30228.59	1903.	1903.	0.00	
								68461.8
OCT								
	4OFPKKWH	744	538915.	38747.98	1809.	1809.	0.00	
	RONPKDMHTG	240	309509.	0.00	1809.	1809.	15506.68	C40F: -
								54254.6
MOA	4OFPKKWH	720	465642.	33479.64	1460.	1460.	0.00	
	BONDKDMHTG	240	283059.	0.00	1460.	1460.	12515.08	
						==== /		45994.72

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/27/1996 16:27:41 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- BS-B SUMMARY OF ELECTRICITY CHARGES

								COMLINORD
нтиом	CHARGE - ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	ENERGY CHARGE (\$)	MBASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
DBC								
	40PPKKWH	744	491445.	35334.89	1461.	1461.	0.00	
	RONPKDMHTG	252	298950.	0.00	1461.	1461.	12523.13	
								47858.02
TOTAL			6767581.	499687.00			180481.17	680168.25

ECO-10

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/15/1996 1:54: 2

READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

REPORT- PS-H EQUIPMENT USE STATISTICS

1:54: 2 PDL RUN 1

AVG OPER BQUIPMENT RATIO (MBTU) 4.712 5088 0.147 4.712 2 20 3 HW-BOTT-RR HERM-CENT-CHLR 0.583 10.090 5 16 3 8.300 1836 0.364 12.212 5 16 2 5.063 5800 COOLING-TWR CTANK-STORAGE 0.466 7.282 8 18 15 73.200 1836

ENTECH ENGINEERING EZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/14/1996 22:12:33 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

P_1	= HOURI	Y-REPORT						PAGE
MODHH	HERM-CEN T-CHLR	HERM-CEN T-CHLR	COOLING- TWR	COOLING- TWR	CTANK-ST ORAGE	CTANK-ST ORAGE	PLANT	PLANT
	LOAD	BLECTRIC	PAN	PUMP	energy	ENERGY	SYS COOL	TOTAL
	_	USB	RLEC	ELEC	RELEASED	STORED	LOAD	COOLING
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR
	( 1)	(3)	(20)	(21)	( 1)	(4)	( 2)	(9)
816 1	8325560.	1646306.	273323.	96264.	٥.	6100000.	1922838.	8325560.
816 2	8069658.	1583426.	273323.	96264.	0.	6100000.	1666936.	8069658.
816 3	7946332.	1547015.	273323.	96264.	٥.	6100000.	1543610.	7946332.
816 4	7880016.	1530765.	273323.	96264.	0.	6100000.	1477293.	7880016.
816 5	7816084.	1515485.	273323.	96264.	0.	6100000.	1413361.	7816084.
816 6	4439905.	836564.	202587.	96264.	0.	1881376.	2255807.	4439905.
816 7	4023550.	770823.	198421.	96264.	0.	0.	3720827.	4023550.
816 8	0.	0.	0.	0.	4767894.	0.	4465172.	0.
816 9	0.	0.	0.	0.	5323436.	0.	5020713.	0.
81610	0.	0.	0.	0.	5668898.	0.	5366176.	0.
81611	0.	0.	0.	0.	5932697.	0.	5629975.	0.
81612	0.	0.	0.	0.	6121349.	0.	5818626.	0.
81613	0.	0.	0.	0.	6339592.	٥.	6036869.	0.
81614	0.	0.	0.	0.	6301569.	0.	5998846.	0.
81615	0.	0.	0.	0.	6079547.	0.	5776824.	0.
81616	0.	0.	0.	0.	5140494.	0.	4837772.	0.
81617	0.	0.	0.	0.	4859908.	0.	4557186.	0.
81618	0.	0.	0.	0.	4245308.	0.	3942585.	0.
81619	0.	0.	0.	0.	3482335.	0.	3179612.	0.
81620	9436227.	1965759.	273323.	96264.	0.	6100000.	3033505.	9436227.
81621	9203944.	1900504.	273323.	96264.	0.	6100000.	2801221.	9203944.
81622	9033544.	1853528.	273323.	96264.	0.	6100000.	2630822.	9033544.
81623	8886283.	1813667.	273323.	96264.	0.	6100000.	2483561.	8886283.
81624	8670088.	1764909.	273323.	96264.	0.	6100000.	2267366.	8670088.
	SUMMARY (AUG 16)					•		
MN	0.	0.	0.	0.	0.	0.	1413361.	0.
MX	9436227.	1965759.	273323.	96264.	6339592.	6100000.	6036869.	9436227.
SM	93731184.	18728748.	3134238.	1155173.	64263024.	62881376.	87847512.	93731184.
AV	3905466.	780365.	130593.	48132.	2677626.	2620057.	3660313.	3905466.

ENTECH ENGINEERING EZDOS - ELITE SOFTWARE DEVELOPMENT INC DOS-2.1D 6/14/1996 22:12:33 PDL RUN 1 RADING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1 = HOURLY-REPORT PAGE 2- 1

P_1	≠ HOURL	Y-REPORT						PAGE 2
	HERM-CEN T-CHLR	HERM-CEN T-CHLR	COOLING- TWR	COOLING- TWR	CTANK-ST ORAGE	CTANK-ST ORAGE	PLANT	PLANT
	LOAD	BLECTRIC	FAN	PUMP	energy	ENERGY	SYS COOL	TOTAL
		USB	RLEC	BTBC	RELEASED	STORED	LOAD	COOLING
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR
	( 1)	(3)	(20)	(21)	( 1)	(4)	(2)	(9)
817 1	8604961.	1746886.	273323.	96264.	0.	6100000.	2202239.	8604961.
817 2	8334408.	1677937.	273323.	96264.	0.	6100000.	1931685.	8334408.
317 3	8222406.	1640857.	273323.	96264.	0.	6100000.	1819684.	8222406.
817 4	8063390.	1601300.	273323.	96264.	0.	6100000.	1660668.	8063390.
817 5	7997030.	1577434.	273323.	96264.	0.	6100000.	1594308.	7997030.
817 6	6008083.	1135227.	267147.	96264.	0.	3295936.	2409424.	6008083.
817 7	4382274.	835591.	196199.	96264.	0.	0.	4079552.	4382274.
317 8	٥.	0.	0.	0.	5224305.	0.	4921582.	0.
317 9	0.	0.	0.	0.	5784334.	0.	5481611.	0.
31710	0.	0.	0.	0.	6005673.	0.	5702950.	0.
31711	0.	0.	0.	0.	6404204.	0.	6101481.	0.
31712	0.	0.	0.	0.	6658178.	0.	6355456.	0.
31713	0.	0.	0.	0.	6764645.	0.	6461923.	0.
31714	0.	0.	0.	0.	6757686.	0.	6454963.	0.
31715	0.	0.	0.	0.	6389315.	0.	6086592.	0.
31716	0.	0.	0.	0.	5430626.	0.	5127904.	0.
31717	0.	0.	0.	0.	5217008.	0.	4914286.	0.
31718	0.	0.	0.	0.	4795852.	0.	4493130.	0.
31719	0.	0.	0.	0.	3885903.	0.	3583180.	0.
31720	9720236.	2067104.	273323.	96264.	0.	6100000.	3317514.	9720236.
31721	9415574.	1978790.	273323.	96264.	0.	6100000.	3012852.	9415574.
31722	9143795.	1893148.	273323.	96264.	0.	6100000.	2741072.	9143795.
31723	8946748.	1830261.	273323.	96264.	0.	6100000.	2544025.	8946748.
31724	8767966.	1782318.	273323.	96264.	0.	6100000.	2365244.	8767966.
DAILY S	SUMMARY (AUG 17)							•
MN	0.	0.	0.	0.	٥.	• o.	1594308.	0.
MX	9720236.	2067104.	273323.	96264.	6764645.	6100000.	6461923.	9720236.
SM	97606864.	19766854.	3196576.	1155173.	69317720.	64295936.	95363320.	97606864.
AV	4066953.	823619.	133191.	48132.	2888238.	2678997.	3973472.	4066953.

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/14/1996 22:12:33 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP 1 **HOURLY-REPORT**

PAGE 3- 1

RP_1	= HOURI	Y-REPORT						PAGE 3-
	HERM-CEN T-CHLR LOAD	HERM-CEN T-CHLR ELECTRIC	COOLING- TWR FAN BLBC	COOLING- TWR PUMP BLEC	CTANK-ST ORAGE ENERGY	CTANK-ST ORAGE ENERGY	PLANT SYS COOL	PLANT TOTAL
	BTU/HR	use btu/hr	BTU/HR	BTU/HR	released BTU/HR	STORED BTU/HR	LOAD BTU/HR	COOLING BTU/HR
	( 1)	(3)	(20)	(21)	( 1)	(4)	(2)	( 9)
818 1	8636384.	1747349.	273323.	96264.	0.	6100000.	2233661.	8636384.
818 2	8434174.	1695263.	273323.	96264.	0.	6100000.	2031452.	8434174.
818 3	8337630.	1662596.	273323.	96264.	0.	6100000.	1934908.	8337630.
818 4	8164430.	1619410.	273323.	96264.	0.	6100000.	1761707.	8164430.
818 5	7977811.	1566811.	273323.	96264.	0.	6100000.	1575088.	7977811.
818 6	8872317.	1781146.	273323.	96264.	0.	6100000.	2469595.	8872317.
818 7	6590370.	1256014.	269782.	96264.	0.	2254912.	4032736.	6590370.
818 8	0.	0.	0.	0.	5256840.	0.	4954118.	0.
818 9	0.	0.	0.	0.	5808053.	0.	5505331.	0.
81810	0.	0.	0.	0.	6218376.	0.	5915653.	0.
81811	0.	0.	0.	0.	6601525.	0.	6298802.	0.
81812	0.	0.	0.	0.	6680344.	0.	6377622.	0.
81813	0.	0.	0.	0.	7079866.	0.	6777144.	0.
81814	0.	0.	0.	0.	7281769.	0.	6979047.	0.
81815	0.	0.	0.	0.	6946938.	0.	6644215.	0.
81816	0.	0.	0.	0.	5940299.	0.	5637577.	0.
81817	0.	0.	0.	0.	5673811.	0.	5371089.	0.
81818	0.	0.	0.	0.	5161632.	0.	4858909.	0.
81819	0.	0.	0.	0.	4527616.	0.	4279052.	0.
81820	9870811.	2178282.	273323.	96264.	0.	5567617.	3946313.	9870811.
81821	9896245.	2176541.	273323.	96264.	0.	5863693.	3729829.	9896245.
81822	9895917.	2176567.	273323.	96264.	0.	6078216.	3514978.	9895917.
81823	9715632.	2123515.	273323.	96264.	0.	6100000.	3312910.	9715632.
81824	9510250.	2062833.	273323.	96264.	0.	6100000.	3107528.	9510250.
DAILY S	SUMMARY (AUG 18)							
MIN	0.	0.	0.	0.	0.	0.	1575088.	0.
MX	9896245.	2178282.	273323.	96264.	7281769.	6100000.	6979047.	9896245.
SM	105901968.	22046324.	3276335.	1155173.	73177064.	68564432.	103249272.	105901968.
AV	4412582.	918597.	136514.	48132.	3049044.	2856851.	4302053.	4412582.

	HERM-CEN	HERM-CEN	COOLING-	COOLING-	CTANK-ST	CTANK-ST	PLANT	PLANT
	T-CHLR LOAD	T-CHLR	TWR	TWR	ORAGE	ORAGE		
	LOAD	ELECTRIC	FAN	PUMP	energy	ENERGY	SYS COOL	TOTAL
	DOWN / TED	USE	BLBC	BLEC	RELEASED	STORED	LOAD	COOLING
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR
	( 1)	(3)	(20)	(21)	( 1)	(4)	( 2)	(9)
819 1		1988647.	273323.	96264.	0.	6100000.	2851255.	9253977.
819 2	9131609.	1940816.	273323.	96264.	0.	6100000.	2728887.	9131609.
819 3	8924754.	1883295.	273323.	96264.	0.	6100000.	2522031.	8924754.
819 4	8851367.	1851191.	273323.	96264.	0.	6100000.	2448645.	8851367.
819 5	8810398.	1839693.	273323.	96264.	0.	6100000.	2407676.	8810398.
819 6	9572536.	2049429.	273323.	96264.	0.	6100000.	3169813.	9572536.
819 7	9967083.	2169064.	273323.	96264.	0.	5071795.	4592566.	9967083.
819 8	0.	0.	0.	0.	5613660.	0.	5310938.	0.
819 9	0.	0.	0.	0.	6122802.	ō.	5820079.	0.
81910	0.	0.	0.	0.	6208665.	0.	5905942.	0.
81911	0.	0.	0.	0.	6379204.	0.	6076482.	0.
81912	0.	0.	0.	0.	6527596.	0.	6224874.	0.
81913	0.	0.	0.	0.	6886882.	0.	6584160.	0.
81914	0.	0.	0.	0.	6712683.	0.	6409960.	0.
81915	0.	0.	٥.	0.	6310945.	0.	6008223.	0.
81916	0.	0.	0.	0.	5313110.	0.	5010388.	0.
81917	0.	0.	0.	0.	4922273.	0.	4619550.	0.
81918	0.	0.	0.	0.	4453642.	0.	4150920.	0.
81919	0.	0.	0.	0.	3853985.	0.	3551262.	0.
81920	9672672.	2043004.	273323.	96264.	0.	6100000.	3269949.	96726 <b>7</b> 2.
81921	9353499.	1951654.	273323.	96264,	0.	6100000.	2950777.	9353499.
81922	9099245.	1863682.	273323.	96264.	0.	6100000.	2696522.	9099245.
81923	8820708.	1781487.	273323.	96264.	0.	6100000.	2417985.	8820708.
81924	8553722.	1705005.	273323.	96264.	o.	6100000.	2151000.	8553722.
DAILY	SUMMARY (AUG 19)							
MIN	0.	0.	0.	0.	0.	٥.	2151000.	0.
MX	9967083.	2169064.	273323.	96264.	6886882.	6100000.	6584160.	9967083.
SM	110011576.	23066968.	3279876.	1155173.	69305440.	72171792.	99879880.	110011576.
AV		961124.	136661.	48132.	2887727.	3007158.	4161662.	4583816.

ENTECH ENGINEERING

EZDOE - BLITE SOFTWARE DEVELOPMENT INC

DOB-2.1D 6/14/1996 22:12:33 PDL RUN 1

4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1 * HOURT.Y-REPORT HERM-CEN HERM-CEN COOLING-COOLING-CTANK-ST CTANK-ST PLANT PLANT T-CHLR T-CHLR TWR TWR ORAGE ORAGE BLECTRIC T.OAD PAN PUMP ENERGY KNERGY SYS COOL TOTAL BLEC BLBC RELEASED USE STORED LOAD COOLING BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----(3) ----(1) ---- (20) ---- (21) ----(1) ---(2) ---(4) ---(9) 1579772. ٥. 6100000. 1693705. 8096428. 273323. 96264. 8096428. 820 1 7758868. 1484915. 273323. 96264. ٥. 6100000. 1356146. 820 2 7758868. 820 3 8010178. 1537843. 273323. 96264. ٥. 6100000. 1607456. 8010178. 820 4 7221889. 1364512. 273323. 96264. O. 6100000. 819166. 7221889. 1302047. 273323. 96264. ٥. 6100000. 570308. 820 5 6973031. 6973031. 6775062. 1257684. 273323. 96264. 0. 6100000. 372339. 820 6 6775062. ٥. 4075616. 820 7 4922699. 544360. 4922699. 820 8 ٥. Ο. ٥. ٥. 879383. ٥. 576661. 0. 820 9 n ٥. ο. ٥. 1387981. ٥. 1085259 ٥ 1558670. ٥. 1255947. 82010 0. ٥. ο. 0. 0. 1033505. 82011 730782. 82012 0. ο. 0. 0 1851636. 0. 1548914. 0. 1422512. 82013 ο. 0. 0. 0. 1725235. 0. 0. 1687046. О. 1384324. 82014 0. ٥. ٥. ο. 82015 ٥. 0. 1705681. Ο. 1402959. 82016 0. ٥. ٥. 0. 1630507. ٥. 1327784. 0. 1463423. 0. 1160700. 82017 0 ο. 0. 0. ο. o. ٥. 493246. 0. 190523. ٥. 82018 ٥. 0. 0. ٥. 321140. ٥. 18418. 82019 273323. 6100000 82020 6488580. 1204361. 96264 Ω. 85857 6488580 6100000. 1195941. 273323. 96264. 48360. 6451083. ٥. 6451083. 82021 3553600. 3914545. 743357. 204145. 96264. 3914545. 82022 0. 348922. 165933. 122609. 96264. Ο. 46200. 348922. 82024 302722. 143918. 122012. 96264. Ο. 0. α. 302722. DAILY SUMMARY (AUG 20) MN 0. ٥. ٥. Ο. 0. 0. 0. 0. 8096428. 1579772. 273323. 96264. 1851636. 6100000. 1693705. 8096428. MX 12878207. 2905905. 1155173. 15737450. 56429216. 19306902. 67264008. SM 67264008. AV 2802667. 536592. 121079. 48132. 655727. 2351217. 804454. 2802667. MONTHLY SUMMARY (AUG) ο. ο. 0. 0. ο. 0. ٥. 273323. 96264. 7281769. 6100000. 6979047. 9967083. 9967083 2178282. ΜX 474515584. 96487104. 15792929. 5775866. 291800672. 324342752. 405646880. 474515584. SM 3954297. 804059. 131608. 48132. 2431672. 2702856. 3380391. 3954297. YEARLY SUMMARY ٥. ٥. ٥. MN 6979047. 9967083. 273323. 96264. 7281769. 6100000. 9967083. MX 2178282. 15792929. 5775866. 291800672. 324342752. 405646880. 474515584. 474515584 96487104. SM AV 3954297. 804059. 131608. 48132. 2431672. 2702856. 3380391. 3954297.

DEVEI 1	LOPME	ENTECH NT INC	ENGINE	ERING DOE-2	.1D	6/13,	EZDOE /1996	23:	ITE SO: 2:27	FTWA: PDL	RE RUN
	READ	ING,	PΔ	7	19603		4130	05 127	י אוראות	(OTTTE	_
MYER	CENT	ER, NJ	FTMOAC	0 - SI	EM MC)	A H20	UNITA M	1/OZ 5	. MOM	IOOIH	_
RP 1			= HOUR			1 1120	OIVIII V	OR L	CIIDI		
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										. <b></b> -	
MMDDH	 III	HERM-CI	 7NT	ueda	 1-CEN		COOLTN				
מעוייוייו	1П	T-CHLR			ILR			IG-	COC	, TTING	-
		LOAD			CTRIC		TWR FAN		TWF	(ID	
		LOAD		USE			ELEC EMM		PUM	iP iC	
		BTU/HR			/HB		ELEC BTU/HR	•	ביתם ביתם	J/HR	
		D10/1110		510/	1110		DIO/HK	-	БІС	) nk	
		(	L)		-(3)		(2	0)		- (21	)
MONT	THLY	SUMMARY	(MAY)								
		302		1	L42762	2.	106	446.		904	65.
N	XN	6348	3487.	12	259033	3.	140				
5	SM	392043	3168.	818	351664	<b>4</b> .	17432	774.	11		
Į	V	2970	0024.	6	520088	3.	132	066.		904	65.
			/								
		SUMMARY		_		_					
		830									
	XN	727: 119455:	1629.		308870	). 1	140	410.	á.	904	65.
	AV AV	4524	1017	2323	320024 300031	ŧ. =					
F	- <b>1</b> V	4324	±01/.	C	300023	J.	139	422.		904	65.
MONT	THLY	SUMMARY	(JUL)				* •				
		1498 7050			13024	5.	133	928.	2.5	904	65.
	NΧ ,	7050	099.	14	139969	∍.	133 140	410.	a latation	904	65.
		119159					33685	284.	21	7116	84.
I	AV	4964	1981.	2	<del>)</del> 52395	5.	140	355.		904	65.
MONT	יוויי	SUMMARY	(AIIG)								
	MN		5628.	-	371830	1	125	262.		904	65
	MX		1769.		503519			410.		904	
	SM	135455			593360		38698		24	9684	
	AV		7798.		951429			212.		904	
1.01-		a a a	(ann)								
		SUMMARY		_		<b>-</b>					
	MN		5402.		L67667			591.		904	
	MX SM	863843	5474.		244477			410.	0.0	904	
	AV AV		79 <b>4</b> 9.		084240		34185		22	7972	
£	H1 V	342	1247.	•	594779	7.	135	655.		904	05.
MON	THLY	SUMMARY	(OCT)								
	MIN		7490.	1	L68654	1.	107	636.		904	65.
ľ	XM	5014	1499.		925996			410.		904	
5	SM	17980	7184.	476	64520	).	13535	717.	9	7702	
7	AV	1664	4881.	4	141338	3.	125	331.		904	65.

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YEARLY SUMMARY

MN	302722.	142762.	106446.	90465.
MX	7281769.	1508870.	140410.	90465.
SM	5176392704.	1028095104.	174344768.	115071920.
AV	4069491.	808251.	137064.	90465.

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DEVELOPME	ENTECH ENGINEE: NT INC D	RING OE-2.1D 6/13	EZDOE - EL1 /1996 23:	TE SOFTWARE 8:17 PDL RUN
READ MYER CENT	ING, PA ER, NJ FTMOACO	19603 - SIM MCA H20 Y-REPORT	4130.05 FT. ONLY W/OA SO	MONMOUTH - CHD1
RP_1	= HOURL			PAGE 1- 1
MMDDHH	HERM-CEN T-CHLR LOAD BTU/HR	T-CHLR ELECTRIC USE	TWR FAN ELEC	TWR PUMP ELEC
	(1)	(3)	(20)	(21)
MONTHLY	SUMMARY (MAY)			
MN	302722. 5349443. 200589872.	142762.	106446.	90465.
MX	5349443.	1003488.	140410.	90465.
SM	200589872.	67526648.	29018834.	22797268.
VA	795992.	267963.	115154.	90465.
MONTHLY	SUMMARY (JUN)		•	
MN	302722. 4387579. 799004608.	142762.	106446.	90465.
MX	4387579.	852782.	140410.	90465.
SM	799004608.	201826736.	59724352.	41252200.
AV	1752203.	442603.	130974.	90465.
MONTHLY	SUMMARY (JUL)			
MN	302722.	142762.	112750.	90465.
MX	4323691.	846269.	140410.	90465.
SM	302722. 4323691. 1085108224.	256997424.	68565728.	45594536.
VA	2152993.	509916.	136043.	90465.
MONTHLY	SUMMARY (AUG)			
MN	302722.	142762.	107603.	90465.
MX	4581775.	923984.	140410.	90465.
SM	870181440.	218168096.	62414300.	42337780.
AV	1859362.	466171.	133364.	90465.
MONTHLY	SUMMARY (SEP)			
MN	302722.	142762.	106446.	90465.
MX	3330085.	669362.	140410.	90465.
SM	558887744.	166955264.	58979604.	42337784.
AV	1194205.	356742.	126025.	90465.
MONTHLY	SUMMARY (OCT)			
MN	302722.	142762.	106446.	90465.
MX	2663557.	566817.	140410.	90465.
SM	112066016.	47640048.	28072178.	22797272.
AV	444706.	189048.	111398.	90465.

MN	302722.	142762.	106446.	90465.
MX	5349443.	1003488.	140410.	90465.
SM	3625837824.	959114240.	306775008.	217116832.
ΑV	1510766.	399631.	127823.	90465

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DOR-2.1D 6/14/1996 22:50:46 PDL RUN 1

PA 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHOl READING. = HOURLY-REPORT PAGR 1- 1 RP_1 HERM-CEN HERM-CEN COOLING-COOLING-CTANK-ST CTANK-ST PLANT PLANT MMDDHH T-CHLR T-CHLR TWR TWR OPACE ORAGE PUMP KNERGY ENERGY SYS COOL CAOL BLECTRIC PAN TOTAL. USB BLEC ELEC RBLEASED STORED COOLING LOAD BTU/HR BTU/HR BTU/HR BTU/HR RTU/HR BTU/HR BTU/HR BTU/HR ----(3) ---- (21) ----( 1) ----(4) ----(1) ---- (20) ----(2) ----(9) MONTHLY SUMMARY (MAY) 0. ٥. ٥. 1955849. 273323. 5046720. мx 10089978. 2124376. 96264. 6100000. 10089978. 136216416 33623428 18482770. 41366828 496733568 124518680. 656171456 SM 656171456 AV 2603855. 540541. 133426. 73344. 164154. 1971165. 494122. 2603855. MONTHLY SUMMARY (JUN) 0. 0. MN 0. ٥. ٥. 0. 0. 0. 10003975. 273323. 96264. 3572792. 6100000. 2162982. 4619729. 10003975. MX 1962902784. 399551264. 78906672. 34655204. 228377680. 1394512768. 658726208. 1962902784. AV 4304612. 876209. 173041. 75998. 500828 3058142. 1444575. 4304612. MONTHLY SUMMARY (JUL) ο. 4080833. 9859441. 9859441. 2119222. 273323. 96264. 3674340. 6100000. 35810376. 1592337536. SM 2315854336. 469431840. 87182632. 363932832. 934877056. 2315854336. 71052. 722089. 3159400. 1854915. ΑV 4594949. 931412. 172981. 4594949. MONTHLY SUMMARY (AUG) MN 0. O. 0. 0. 0. 3652677. 6100000. 9967083. 2178282. 273323. 96264. 4592566. 9967083. MX 2195670528. 449867264. 84663120. 35810376. 191632736. 1514996352. 730578496. 2195670528. AV 4691604. 961255 180904 76518. 409472. 3237172 1561065 4691604 MONTHLY SUMMARY (SEP) ٥. ٥. 0. ο. 0. ٥. 9191487. 1906205 273323. 96264. 3143705. 6100000. 3688951 9191487. MY 1444583552. 299871680. 69593840. 34655204. 194722208. 1079039488. 418591904. 1444583552. SM 640751. 148705. 74050. 416073. 2305640. 894427. 3086717. MONTHLY SUMMARY (OCT) 6916221. 2663557. 273323. 96264. 1285772. 6100000. 2360835. 6916221.

17327596.

٥.

96264.

73642.

176741536.

45631888.

3674340.

444027.

1065664128.

236072096.

6100000.

2630705.

6313691648.

35517524.

140943.

5046720.

1209504.

2902809856.

302243744.

1199380.

10089978.

3698927.

8877425664.

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

ENTECH ENGINEERING

SM

ΑV VEADLY SUMMARY

MN

SM

ΑV

302243744.

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3698927.

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٥. 10089978. 69409032.

275433.

2178282.

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1824347392.

24934110.

98945.

273323.

157877.

378903840.

19603

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/15/1996 1:24:15 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ PTMCACO - SIM MCA H20 ONLY W/OA SCHD1
REPORT- PS-H EQUIPMENT USE STATISTICS WEATHER FILE- NEWARK, NJ

	AVG	MAX	MON					
EQUIPMENT	OPER	LOAD	DAY	SIZE OPER	SIZE OPER	SIZE OPER	SIZE OPER	SIZE OPER
	RATIO	(MBTU)	HR	(mbtu) hrs	(MBTU) HRS	(MBTU) HRS	(MBTU) HRS	(MBTU) HRS
HW-BOILER	0.147	4.712	2 20 3	4.712 5088				
HERM-CENT-CHLR	0.398	11.449	5 16 2	8.300 2680				
imid: Calvi Citat	0.550		5 20 2	0.500 2000				
COOLING-TWR	0.302	13.624	5 16 2	5.063 7087				
CTANK-STORAGE	0.752	3.700	10 14 16	44.000 1836				
•								

Hourry Profice

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/14/1996 23:53:45 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
RP_1 ** HOURLY-REPORT PAGE 2- 1

	HERM-CEN T-CHLR LOAD	HERM-CEN T-CHLR BLECTRIC	COOLING- TWR FAN	COOLING- TWR PUMP	CTANK-ST ORAGE ENERGY	CTANK-ST ORAGE ENERGY	PLANT SYS COOL	PLANT TOTAL
	TOAD	USB	BLEC	ELEC	RELEASED	STORED	LOAD	COOLING
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR
	( 1)	(3)	(20)	(21)	( 1)	( 4)	( 2)	( 9)
317 1	8604961.	1746886.	273323.	96264.	0.	6100000.	2202239.	8604961.
317 2	8334408.	1677937.	273323.	96264.	0.	6100000.	1931685.	8334408.
317 3	3431654.	699418.	190706.	96264.	0.	1309248.	1819684.	3431654.
317 4	1963390.	516442.	129866.	96264.	0.	0.	1660668.	1963390.
317 5	1897030.	506345.	129413.	96264.	0.	0.	1594308.	1897030.
317 6	2712147.	598404.	134175.	96264.	0.	0.	2409424.	2712147.
317 7	4382274.	835591.	196199.	96264.	0.	0.	4079552.	4382274.
317 8	1524305.	489328.	123001.	96264.	3700000.	0.	4921582.	1524305.
317 9	2084334.	552305.	126479.	96264.	3700000.	0.	5481611.	2084334.
31710	2305673.	581841.	129642.	96264.	3700000.	٥.	5702950.	2305673.
31711	2704204.	623467.	130526.	96264.	3700000.	0.	6101481.	2704204.
31712	2958178.	665086.	131350.	96264.	3700000.	0.	6355456.	2958178.
31713	3064645.	684241.	132624.	96264.	3700000.	0.	6461923.	3064645.
31714	3057686.	678704.	131905.	96264.	3700000.	0.	6454963.	3057686.
31715	2689315.	633799.	130502.	96264.	3700000.	0.	6086592.	2689315.
31716	1730626.	517093.	124716.	96264.	3700000.	0.	5127904.	1730626.
31717	1517008.	491757.	122012.	96264.	3700000.	0.	4914286.	1517008.
31718	1095852.	454859.	118174.	96264.	3700000.	0.	4493130.	1095852.
81719	612431.	317287.	114473.	96264.	3273472.	0.	3583180.	612431.
81720	9720236.	2050749.	273323.	96264.	0.	6100000.	3317514.	9720236.
81721	9415574.	1978712.	273323.	96264.	0.	6100000.	3012852.	9415574.
81722	9143795.	1893147.	273323.	96264.	0.	6100000.	2741072.	9143795.
81723	8946748.	1830261.	273323.	96264.	0.	6100000.	2544025.	8946748.
81724	8767966.	1782318.	273323.	96264.	0.	6100000.	2365244.	8767966.
DAILY S	SUMMARY (AUG 17)							
MN	612431.	317287.	114473.	96264.	0.	• 0.	1594308.	612431.
MX	9720236.	2050749.	273323.	96264.	3700000.	6100000.	6461923.	9720236.
SM	102664432.	22805980.	4209023.	2310346.	43973472.	44009248.	95363320.	102664432.
AV	4277685.	950249.	175376.	96264.	1832228.	1833719.	3973472.	4277685.

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/14/1996 23:53:45
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP 1 - HOURLY-REPORT PAGE 3- 1 HERM-CEN HERM-CEN COOLING-COOLING-CTANK-ST CTANK-ST PLANT PLANT T-CHLR T-CHI.D TWD TWR ORAGE ORAGE BLECTRIC LOAD FAN PUMP KNEEGY RNRBGY SYS COOL TOTAL USE BLBC BLBC RELEASED STORED COOLING CAOL BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----( 1) ----(3) ---- (20) ---- (21) ---- ( 1) ---(4) ---(2) 818 1 8636384. 1747349. 273323. 96264. 0. 6100000 2233661. 8636384. 818 2 8434174. 1695263. 273323. 96264. 0. 6100000. 2031452. 8434174. 818 3 3547694. 712602. 193209. 96264. ٥. 1310064. 1934908. 3547694. 818 4 2064430. 524006 131377. 96264. Ο. ٥. 1761707. 2064430. 1877811. 501406. 818 5 131123. 96264. ο. 0. 1575088. 1877811. 818 6 2772317. 599129. 135208. 96264. ο. 0. 2469595. 2772317. 96264. 818 7 4335458. 823574. 198238. ٥. 4032736. ٥. 4335458. 818 8 1556840. 486717. 124188. 96264. 3700000. 4954118. 1556840. 818 9 2108053. 551507. 128301. 96264. 3700000. ٥. 5505331. 2108053. 81810 2518376. 600111. 130143. 96264. 3700000. ٥. 5915653 2518376. 81811 2901525. 653210. 131688. 96264. 3700000. ٥. 6298802. 2901525. 81812 2980344 668098 132830. 96264. 3700000 6377622. 2980344. 81813 3379866. 719375. 134816. 96264 3700000. ٥. 6777144. 3379866. 81814 3581769. 748129. 134542. 96264. 3700000. ٥. 6979047. 3581769 81815 3246937. 710006. 131129. 96264. 3700000. 6644215. 3246937. 81816 2240300. 591015. 124679. 96264. 3700000. 5637577. 2240300. 559647. 81817 1973811. 122589. 3700000. 96264. ٥. 5371089 1973811. 81818 1461631. 504285. 118057. 96264. 3700000. ٥. 4858909. 1461631. 81819 1310031. 488012. 116561. 96264. 3271744. 4279052. 1310031. 81820 10349036. 2085808. 273323. 192529. ο. 6100000. 3946313. 10349036. 81821 10132552. 2042872. 273323. 6100000. 192529. ٥. 3729829 10132552. 81822 9917701. 2001510. 273323. 192529. 6100000. ο. 3514978. 9917701. 81823 9715632. 2127740 273323 96264. ٥. 6100000. 3312910. 9715632. 81824 9510250. 2062854. 273323. 96264. ٥. 6100000. 3107528. 9510250. DAILY SUMMARY (AUG 18) 486717. 1310031. 116561. MN 96264 0. n 1575088. 1310031. 10349036. 2127740. 273323. 192529. 3700000. 6100000. 6979047. 10349036. SM 110552920. 24204222. 4231939. 2599139. 43971744. 44010064. 103249272. 110552920. ΑV 4606372. 1008509. 176331. 108297. 1832156. 1833753. 4302053. 4606372.

23:53:45 PDL RUN 1

ENTECH ENGINEERING READING, 19603

EZDOE - ELITE SOFTWARE DEVELOPMENT INC

DOR-2.1D 6/14/1996 23:53:45 PDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RP_1 - HOURLY-REPORT PAGE 4- 1 HERM-CEN HERM-CEN COOLING-COOLING-CTANK-ST CTANK-ST PLANT PLANT T-CHLR T-CHLR TWR TWR ORAGE ORAGE BLECTRIC LOAD FAN PUMP KNERGY ENERGY SYS COOL TOTAL USE BLEC BLEC RELEASED STORED LOAD COOLING BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ----( 1) ----(3) ---- (20) ----(21) ----( 1) ----( 2) ---(9) 9253977. 819 1 1988647. 273323. 96264. ٥. 6100000. 2851255. 9253977. 819 2 9131609. 1940816. 273323. 96264. ٥. 6100000. 2728887. 9131609. 819 3 4136370. 834952. 190861. 96264. 1311616. ٥. 2522031. 4136370. 2751367. 96264. 819 4 628152 130092. ٥. 2448645. 2751367. 819 5 2710398. 622943. 129844. 96264. ٥. ٥. 2407676. 2710398. 819 6 3472536. 726455. 133998. 96264. ٥. 0. 3169813. 3472536. 819 7 4895288 957644. 196895. 96264. ٥. ٥. 4592566. 4895288. 819 8 1913660. 540565. 125266. 96264. 3700000. 0. 5310938. 1913660. 819 9 2422802. 596014. 128818 96264. 3700000. ٥. 5820079. 2422802. 81910 2508665. 606618. 130125. 96264. 3700000. 0. 5905942. 2508665. 81911 2679204. 624143. 130397. 96264. 3700000. 0. 6076482. 2679204. 81912 2827596 647588. 131290. 96264. 3700000. ٥. 6224874. 2827596 81913 3186882. 696752. 131973. 96264. 3700000. ٥. 6584160. 3186882. 81914 3012683. 681800. 131702. 96264. 3700000. ٥. 6409960. 3012683. 81915 2610945. 623708. 130027. 3700000. 96264. 0. 6008223. 2610945. 81916 1613110. 504844. 122850. 96264. 3700000. ٥. 5010388. 1613110. 81917 1222273. 466486. 118388. 96264. 3700000. ٥. 4619550. 1222273. 81918 753642. 394563. 3700000. 115478. 96264. ٥. 4150920. 753642. 81919 581505. 299114. 112712. 96264. 3272480. ٥. 3551262. 581505. 81920 9672672. 2049826. 273323. 96264. ٥. 6100000. 3269949. 9672672. 81921 9353499. 1951686. 273323. 96264. 6100000. 2950777. 9353499 9099245. 81922 1863682. 273323 96264. ٥. 6100000. 2696522. 9099245. 81923 8820708. 1781487. 273323. 96264. ٥. 6100000. 2417985. 8820708. 81924 8553722. 1705005. 273323. 96264. ο. 6100000. 2151000. 8553722. DAILY SUMMARY (AUG 19) 581505. 299114. 112712. 96264. ۵. 0. 2151000. 581505. MX 9672672. 2049826. 273323. 3700000. 96264. 6100000. 6584160. 9672672. SM 107184344. 23733492. 4203975. 2310346. 43972480. 44011616. 99879880. 107184344. AV 4466015. 988896. 175166. 96264. 1832187. 1833817. 4161662. 4466015.

ENTECH ENGINEERING BZDOB - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/14/1996 23:53:45 PDL RUN 1
READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

RF_1 = HOURLY-REPORT PAGE 5- 1

	HERM-CEN	HERM-CEN	COOLING-	COOLING-	CTANK-ST	CTANK-ST	PLANT	PLANT
	T-CHLR	T-CHLR	TWR	TWR	ORAGE	ORAGE		FIRMI
	LOAD	BLECTRIC	FAN	PUMP	ENERGY	ENERGY	SYS COOL	TOTAL
		USB	BLBC	RLEC	RELEASED	STORED	LOAD	COOLING
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR
		-	•	,	,	D10/1110	BIO/ AR	BIU/AR
	(1)	(3)	(20)	(21)	( 1)	(4)	(2)	(9)
820 1	8096428.	1579772.	273323.	96264.	0.	6100000.	1693705.	8096428.
820 2	7758868.	1484915.	273323.	96264.	0.	6100000.	1356146.	7758868.
820 3	3220147.	645250.	200639.	96264.	0.	1309968.	1607456.	3220147.
820 4	1121888.	417839.	129259.	96264.	0.	0.	819166.	1121888.
820 5	873031.	396212.	127424.	96264.	0.	0.	570308.	873031.
820 6	675061.	319185.	125392.	96264.	0.	0.	372339.	675061.
320 7	847083.	394195.	129385.	96264.	0.	0.	544360.	847083.
820 8	0.	0.	0.	0.	879383.	0.	576661.	0.
320 9	0.	0.	0.	0.	1387981.	0.	1085259.	0.
82010	0.	0.	0.	0.	1558670.	0.	1255947.	0.
82011	0.	0.	0.	0.	1033505.	0.	730782.	0.
82012	0.	0.	0.	0.	1851636.	ō.	1548914.	0.
82013	0.	0.	0.	0.	1725235.	o.	1422512.	0.
82014	0.	0.	0.	0.	1687046.	Ö.	1384324	0.
82015	0.	0.	0.	0.	1705681.	ó.	1402959.	0.
82016	0.	٥.	0.	0.	1630507.	0.	1327784.	0.
82017	0.	0.	0.	0.	1463423.	0.	1160700.	0.
82018	0.	0.	0.	0.	493246.	0.	190523.	0.
32019	0.	0.	0.	0.	321140.	0.	18418.	0.
82020	6488580.	1204361.	273323.	96264.	0.	6100000.	85857.	6488580.
32021	6451083.	1195941.	273323.	96264.	0.	6100000.	48360.	6451083.
32022	3918737.	743976.	204172.	96264.	0.	3557792,	58222	3918737.
82023	348922.	165933.	122609.	96264.	0.	0.	46200.	348922.
32024	302722.	143918.	122012.	96264.	0.	0.	0.	302722.
	MMARY (AUG 20)							
MIN	0.	0.	0.	0.	· 0.	· 0.	0.	0.
MIX	8096428.	1579772.	273323.	96264.	1851636.	6100000.	1693705.	8096428.
SM	40102552.	8691497.	2254184.	1155173.	15737450.	29267760.	19306902.	40102552.
AV	1670940.	362146.	93924.	48132.	655727.	1219490.	804454.	1670940.
MONTHLY	SUMMARY (AUG)							
MN	0.	0.	0.	0.	0.	٥.	0.	0.
MX	10349036.	2127740.	273323.	192529.	3700000.	6100000.	6979047.	10349036.
SM	455650208.	100587112.	19114532.	10685350.	191631328.	205307968.	405646880.	455650208.
AV	3797085.	838226.	159288.	89045.	1596928.	1710900.	3380391.	3797085.
KARLY S	UMMARY							
MN	0.	0.	0.	0.	0.	0.	0.	•
MΧ	10349036.	2127740.	273323.	192529.	3700000.	6100000.	6979047.	0. 10349036.
SM	455650208.	100587112.	19114532.	10685350.	191631328.	205307968.	405646880.	455650208.
AV	3797085.	838226.	159288.	89045.	1596928.	30330,300.	40J040000.	<b>*</b> >>>>∪∠U8.

ECO-11 ON-PEAK

	ENTECH ENG	INEERING	BZDOB - BL	ITE SOFTWARE D	EVELOPMENT INC	DOR-2.1D	6/15/1996	1:24:15 PDL RU	NT 1
	ADING, P	A 19603	4130.05 FT	. MONMOUTH - M	YER CENTER, NJ	FTMOACO - SIM	MCA H20 ONLY W/	OA SCHOL	^ -
RP_1	= H	OURLY-REPORT						PAGE 1-	1
MIDDHH	HERM-CEN T-CHLR	HERM-CEN T-CHLR	COOLING- TWR	COOLING- TWR	CTANK-ST ORAGE	CTANK-ST ORAGE	PLANT	PLANT	
	LOAD	BLECTRIC	Fan	PUMP	ENERGY	ENERGY	SYS COOL	TOTAL	
		USB	RFEC	BLEC	RELEASED	STORED	LOAD	COOLING	
	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	BTU/HR	
	( 1)	( 3)	(20)	(21)	( 1)	( 4)	( 2)	( 9)	
MONTHLY	SUMMARY (MA								
MN	0		0.	0. 96264.	302722.	۵.	0	0.	
MX	2648487	. 616376.	135088.	96264.	3700000.	0.	0. 6045765.	2648487.	
SM	52971264		6362738.	5005751.	338857088.	0.	351868960.	52971264.	
AV	401297	. 139205.	48203.	37922.	2567099.	o.		401297.	
MONTHLY	SUMMARY (JU								
MIN	0	. 0.	0.	0.	1114873.	0.	812151.	0.	
MX	3571629	. 751448.	134514.	96264.	3700000.	0.			
SM	282317312	. 86843608.	24336650.	18771562.	914471296.		1116869888.		
AV	1069384	. 328953.	92184.	71104.	3463907.	0.			
MONTHLY	SUMMARY (JU	L)							
MN	0	. 0.	0.	0.	2356196.	0.	2053473.	0.	
MX	3350099	. 715213.	135483.	96264.	3700000.	0.			
SM	316338784	. 97399040.	27898160.	21274440.		0.			
AV	1318078	. 405829.	116242.	88644.	3637148.	0.	4652504.	1318078.	
MONTHLY	SUMMARY (AUG								
MN	0	. 0.	0.	0.	1092452.	0.	789730.	0.	
MX	3581769	. 748129.	135909.	96264.	3700000.	0.		3581769.	
SM	366838848	. 109692824.	30728180.	23488520.		0.	1268929792.		
AV	1329126	. 397438.	111334.	85103.	3571169.	0.	4597572.	1329126.	
	SUMMARY (SE	₽)							
MIN	0		0.		483018.	• 0.	180296.	0.	
MX	2535474	. 609965.	134598.		3700000.	0.	5932752.	2535474.	
SM	121760576		14530494.	11455467.	740704128.	0.	786178688.	121760576.	
AV	483177	. 166009.	57661.	45458.	2939302.	0.	3119757.	483177.	
	SUMMARY (OC	-							
MN	0					0.	0.	0.	
MEX	1314499		132330.	96264.		0.	0. <b>471177</b> 7.	1314499.	
SM	4782947		864847.	673851.	175286672.	0.	147375584.	4782947.	
AV	44287	. 17676.	8008.	6239.	1623025.	0.	1364589.	44287.	
	SUMMARY								
MN	0		٥.	0. 96264.	302722.	0.	0. 6979047.	0.	
MX						0.	6979047.	3581769.	
SM			104721072.	80669584.		0.		1145009792.	
AV	900165	. 279917.	82328.	63419.	3166570.	0.	3764012.	900165.	

ECO-11 Off-Pierk

ENTECH ENGINEERING RZDOK - BLITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/15/1996 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 READING, PA 19603 - HOURLY-REPORT RP_1 PAGE 1- 1 HERM-CEN COOLING-COOLING-**HHOODH**H HERM-CEN CTANK-ST CTANK-ST PLANT PLANT T-CHLR T-CHLR TWR TWR ORAGE ORAGE BLECTRIC PUMP LOAD ENERGY KNERGY SYS COOL TOTAL USB BLEC RLRC RELEASED STORED LOAD COOLING BTU/HR BTTI/HR BTTI/HR BTU/HR BTU/HR BTU/HR BTU/HR BTU/HR ---( 1) ----(3) ---- (20) ---- (21) ----( 1) ---- ( 4) ----(2) ---( 9) MONTHLY SUMMARY (MAY) ۵. MN 0. 0. α. n a. 0. 11449442. 273323. 192529. MX 2174647. 1955849. 6100000. 5046720. 11449442. 575690880. 121960280. 31619334. 18675298. 41366828. 416252896. 124518680. 575690880. ΑV 2284488. 483969. 125474. 74108. 164154. 1651797. 494122. 2284488. MONTHLY SUMMARY (JUN) 0. n. MX 10062979. 2149821. 273323. 192529. 3572792. 6100000. 4619729. 10062979. 34751468 SM 1704813056 354296640. 72701424. 228377680. 1136423424. 658726208. 1704813056. 3738625. 776966. 159433. 76209. ΑV 500828. 2492157. 1444575. 3738625. MONTHLY SUMMARY (JUL) MN 0. ٥. 0. 0. 0. ٥. ٥. 9859441. 96264. MX 2116499. 273323. 3674340. 4080833. 6100000. 9859441. 1973575936. 411029024. 78867176. 35810376. 363932832. 1250059520. 934877056 1973575936 ΑV 3915825. 815534. 156482. 71052. 722089. 2480277. 1854915. 3915825. MONTHLY SUMMARY (AUG) ٥. ٥. ٥. 0. 3652677. 10349036 2127740. 273323. 192529. 10349036. MY 6100000. 4592566. 1846620544. 387588928. 76387736. 36099168. SM 191632736. 1166000640 730578496. 1846620544. 163222. ΑV 3945771. 828182. 77135. 409472. 2491454. 1561065. 3945771. MONTHLY SUMMARY (SEP) Ο. ٥. 0. 0. ٥. 9191487. 1893722. 273323. 96264. 3143705. 6100000. 3688951. 9191487. 34655204. SM 1309061632. 276886496. 66190880. 194722208. 943517568 418591904. 1309061632. AV 2797140. 591638. 141434. 74050. 416073. 2016063. 894427 2797140. MONTHLY SUMMARY (OCT) 0. 0. ٥. ٥. MN 0. ο. ٥ 0. 6916221. 1285772. 273323. 96264. 2663557. 6100000. 2360835. 6916221. SM 293388768 68229096 24710630 17327596 45631888. 227217088. 35517524. 293388768. 270750. 98058. 68760. AV 1164241. 181079. 901655. 140943. 1164241. YEARLY SUMMARY MN 0. 0. ٥. 0. 0. ο. ٥. ٥. 11449442. ΜX 2174647. 273323. 192529. 3674340. 6100000. 5046720 11449442

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7703150592.

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ECO-12

ENTECH ENGINEERING READING, PA 19603 EPORT- ES-D SUMMARY OF FUEL AND U	4130.05 FT		MENT INC DOE-2.1D 6/18/1996 20:50: 7 EDL RUN 1 RYTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1
***************************************	ELECTRIC	FUEL-OIL	
МОЙТН	UNIT=	UNIT=	
MONTH	3413.00	138690.00	
	3413.00	136690.00	
			\
JAN		264.2	/ MO. Mar Le L' MADIALE
ENERGY CONSUMPTION (UNIT/MO)	492409.	9619.	V AWABUE TUNIFING
PEAK DEMAND (UNIT/HR)	1462.	37.	• • • • • • • • • • • • • • • • • • • •
TOTAL COST (\$)	50385.11	5675.37	• • • • • • • • • • • • • • • • • • •
FEB			
ENERGY CONSUMPTION (UNIT/MO)	443235.	7702.	VARIABLE PUMPING EXISTING CONDITION
PEAK DEMAND (UNIT/HR)	1462.	41.	
TOTAL COST (\$)	46606.48	4543.95	FARTIL CONDITION
MAR			DXI 317NG
ENERGY CONSUMPTION (UNIT/MO)	507936.	5389.	· •
PEAK DEMAND (UNIT/HR)	1460.	24.	
TOTAL COST (\$)	51708.00	3179.24	
APR			
ENERGY CONSUMPTION (UNIT/MO)	471645.	1667.	
PEAK DEMAND (UNIT/HR)	1450.	19.	
TOTAL COST (\$)	48771.78	983.57	
MAY			
ENERGY CONSUMPTION (UNIT/MO)	569655.	209.	
PEAK DEMAND (UNIT/HR)	1922.	4.	
TOTAL COST (\$)	60200.39	123.51	
JUN			
ENERGY CONSUMPTION (UNIT/MO)	700313.	0.	
PEAK DEMAND (UNIT/HR)	1992.	0.	
TOTAL COST (\$)	72612.47	0.00	
JUL COOL (4)	,,	5.55	
ENERGY CONSUMPTION (UNIT/MO)	706960.	0.	
PEAK DEMAND (UNIT/HR)	1987.	0.	
TOTAL COST (\$)	72770.63	0.00	
AUG			
ENERGY CONSUMPTION (UNIT/MO)	736229.	٥.	•
PEAK DEMAND (UNIT/HR)	1989.	0.	
TOTAL COST (\$)	75364.64	0.00	
SEP (\$)			
ENERGY CONSUMPTION (UNIT/MO)	661987.	0.	
PEAK DEMAND (UNIT/HR)	1929.	0.	
TOTAL COST (\$)	68992.77	0.00	
OCT	00334.11	0.00	
ENERGY CONSUMPTION (UNIT/MO)	540086.	323.	
PEAK DEMAND (UNIT/HR)	1831.	323. 9.	
PEAK DEMAND (UNIT/HR) TOTAL COST (S)	57068.06	9. 190.39	
NOV	3/000.06	130.33	
ENERGY CONSUMPTION (UNIT/MO)	465371.	3663.	
PEAR DEMAND (UNIT/HR)	1459.	23.	
	48288.68	23.	
TOTAL COST (\$)	40400.00	2100.31	
DEC CONGINEETON (IDITE (MO)	401305	9407	
ENERGY CONSUMPTION (UNIT/MO)	491305.	8407.	
PEAK DEMAND (UNIT/HR)	1462.	28.	
TOTAL COST (\$)	50302.42	4960.15	
TOTAL	6000130	26070	
ENERGY CONSUMPTION (UNIT/YR)	6787130.	36978.	
PEAK DEMAND (UNIT/HR)	1992.	41.	
TOTAL COST (\$)	703071.44	21817.08	

ENTECH ENGINEERING EZDOB - ELITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/18/1996 20:50: 7 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-B SUMMARY OF ELECTRICITY CHARGES

ONTH	CHARGE- ASSIGNMENT (U-NAME)	LENGTH (HR/MO)	CONSUMPTION BY C-A (KWH)	energy Charge (\$)	MEASURED DEMAND (KW)	BILLING DEMAND (KW)	DEMAND CHARGE (\$)	TOTAL CHARGES (\$)
							*********	
AN	400000000							
	40FPKKWH	492	193243.	13894.16	787.	787.	0.00	
	BONDKDMHTG	252	299165.	0.00	1462.	1462.	12527.85	
	BONPKKWH	252	299165.	23963.10	1462.	1462.	0.00	
ΣB								50385.11
	40FPKKWH	444	173699.	12488.97	787.	787.		
	BONPKDMETG	228	269534.	0.00	1462.	787. 1462.	0.00	
	BONPKKWH	228	269534.	21589.66	1462.	1462.	12527.85	
	2011 101112	220	20,554.	42303.00	1402.	1462.	0.00	:45505 40
LR.								46606.48
	40FPKKWH	468	182063.	13090.36	787.	787.	0.00	
	BONPKDMHTG	276	325872.	0.00	1460.	1460.	12515.29	•
	BONPKKWH	276	325872.	26102.35	1460.	1460.	0.00	
				_			5.55	51708.00
PR								
	40FPKKWH	468	174886.	12574.32	787.	787.	0.00	
	BONPKDMHTG	252	296759.	0.00	1450.	1450.	12427.03	
	BONPKKWH	252	296759.	23770.44	1450.	1450.	0.00	
								48771.78
ΑY								
	40FPKKWH	492	231908.	16674.15	1058.	1058.	0.00	
	BONPKDMHTG	252	337747.	0.00	1922.	1922.	16472.73	
	BONPKKWH	252	337747.	27053.51	1922.	1922.	0.00	
								60200.39
UN			*****	*****				
	40FPKKWH	456	286599.	20606.45	1092.	1092.	0.00	
	BONPKDMCL BONPKKWH	264 264	413713. 413713.	0.00	1992.	1992.	18867.59	•
	BONFARMS	204	413/13.	33138.43	1992.	1992.	0.00	
л.								72612.47
-4	40FPKKWH	504	325704.	23418.14	1076.	1076		
	BONPKDMCL	240	381256.	0.00	1987.	1076. 1987.	0.00 18813.90	
	BONPKKWH	240	381256.	30538.59	1987.	1987.	0.00	
						2001.	0.00	72770.63
)G								12//0.63
	40FPKKWH	468	297876.	21417.29	1099.	1099.	0.00	
	BONPKDMCL	276	438353.	0.00	1989.	1989.	18835.25	
	BONPKKWH	276	438353.	35112.10	1989.	1989.	0.00	
					•			75364.64
3P								
	40FPKKWH	468	281033.	20206.26	1069.	1069.	0.00	
	BONPKDMCL	252	380955.	0.00	1929.	1929.	18272.00	
	BONPKKWH	252	380955.	30514.52	1929.	1929.	0.00	
								68992.77
T	405577777							
	40FPKKWH	504	229810.	16523.32	965.	965.	0.00	
	EONPKDMHTG EONPKKWH	240	310278.	0.00	1831.	1831.	15691.49	
		240	310278.	24853.25	1831.	1831.	0.00	

ENTECH ENGINEERING

EZDOE - BLITE SOFTWARE DEVELOPMENT INC

DOE-2.1D 6/18/1996 20:50: 7 EDL RUN 1 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1

READING, PA 19603 4130.
REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

------CONTINUED-----CHARGE-CONSUMPTION ENERGY MEASURED BILLING DEMAND TOTAL. MONTH ASSIGNMENT LENGTH BY C-A CHARGE DEMAND DEMAND CHARGE CHARGES (U-NAME) (HR/MO) (KWH) (\$) (KW) (KW) (\$) (\$) -----------NOV 40FPKKWH 480 182353. 13111.20 787. 787. 0.00 BONPKDMHTG 240 283017. 0.00 1459. 1459. 12507.81 BONPKKWH 283017. 22669.67 1459. 1459. 0.00 48288.68 DEC 40FPKKWH 492 192529. 13842.83 787. 787. 0.00 BONPKOMHTG 252 298773. 0.00 1462. 1462. 12527.85 BONPKKWH 252 298773. 23931.73 1462. 1462. 0.00 50302.42 TOTAL 6787130. 521084.78 181986.66 703071.44

Names chiles

ECO-12

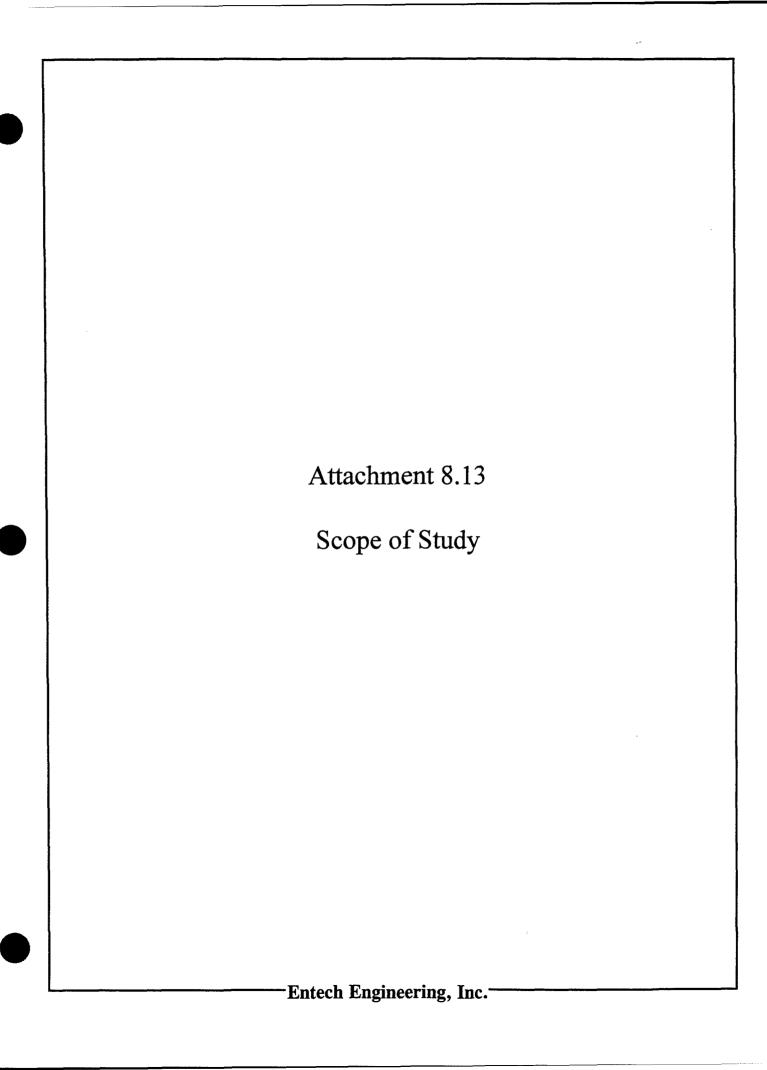
ENTECH ENGINEERING		ITE SOFTWARE DEVELOR	
READING, PA 19603			INTER, MJ FIMOACO - SIM MCA H20 ONLY W/OA SCHD1
ORT- ES-D SUMMARY OF FUEL AND T	TILITY USE AND	COSTS	
	BLECTRIC	FUEL-OIL	
ONTH	UNIT=	UNIT=	
<del></del>	3413.00	138690.00	
AN			,
ENERGY CONSUMPTION (UNIT/MO)	492409.	9619.	1/10.121 FUNXY
PEAK DEMAND (UNIT/HR)	1462.	37.	VARIATION TOTAL
TOTAL COST (\$)	50385.11	5675.37	<b>Y</b>
RB	30363.11	36/3.3/	VARIABUE PUIMIF PROPOSED COND
ENERGY CONSUMPTION (UNIT/MO)	443235.	7702.	1)0 0000 ( 6.10
PEAK DEMAND (UNIT/HR)	1462.	41.	PRAVIOSED COND
TOTAL COST (\$)	46606.48	4543.95	Popular
AR	40000.40	4545.55	•
ENERGY CONSUMPTION (UNIT/MO)	507936.	5389.	
PEAK DEMAND (UNIT/HR)	1460.	24.	
	51708.00		
TOTAL COST (\$)	31/08.00	3179.24	
PR	477.545	1669	
ENERGY CONSUMPTION (UNIT/MO)	471645.	1667.	
PRAK DEMAND (UNIT/HR)	1450.	19.	
TOTAL COST (\$)	48771.78	983.57	
AY			
ENERGY CONSUMPTION (UNIT/MO)	549054.	209.	
PEAK DEMAND (UNIT/HR)	1907.	4.	
TOTAL COST (\$)	58547.22	123.51	
IN .			
ENERGY CONSUMPTION (UNIT/MO)	668670.	0.	
PEAK DEMAND (UNIT/HR)	1988.	0.	
TOTAL COST (\$)	70228.48	0.00	
TL			
ENERGY CONSUMPTION (UNIT/MO)	676374.	0.	
PEAK DEMAND (UNIT/HR)	1983.	0.	
TOTAL COST (\$)	70481.09	0.00	
JG .			
ENERGY CONSUMPTION (UNIT/MO)	705402.	0.	•
PEAK DEMAND (UNIT/HR)	1986.	0.	
TOTAL COST (\$)	73053.52	0.00	
SP .			
ENERGY CONSUMPTION (UNIT/MO)	626595.	0.	
PEAK DEMAND (UNIT/HR)	1915.	õ.	
TOTAL COST (\$)	66227.12	0.00	
T		0.00	
ENERGY CONSUMPTION (UNIT/MO)	518685.	323.	
PEAK DEMAND (UNIT/HR)	1801.	9.	
TOTAL COST (\$)	55224.77	190.39	
ov	JJ221.77	250.55	
ENERGY CONSUMPTION (UNIT/MO)	465371.	3663.	
PEAK DEMAND (UNIT/HR)	1459.	23.	
TOTAL COST (\$)	48288.68	2160.91	
C (\$)	70200.00	2100.71	
ENERGY CONSUMPTION (UNIT/MO)	491305.	8407.	•
PEAK DEMAND (UNIT/HR)	1462.		
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		28.	
TOTAL COST (\$)	50302.42	4960.15	
OTAL CONCERNMENT ON (INITY/VI)	6616600	3.5070	
ENERGY CONSUMPTION (UNIT/YR)	6616680.	36978.	
PEAK DEMAND (UNIT/HR)	1988.	41.	
TOTAL COST (\$)	689824.69	21817.08	

ENTECH ENGINEERING EZDOE - BLITE SOFTWARE DEVELOPMENT INC DOB-2.1D 6/18/1996 10:22:31 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

ютн	CHARGE- ASSIGNMENT	LENGTH	CONSUMPTION BY C-A	energy Charge	MEASURED DEMAND	BILLING DEMAND	DEMAND CHARGE	TOTAL CHARGES
	(U-NAME)	(HR/MO)	(KWH)	(\$)	(KW)	(KW)	(\$)	(\$)
JAN	40FPKKWH	492	193243.	13894.16	787.			
	BONPKDMHTG	252	299165.	0.00	1462.	787.	0.00	
	BONPKKWH	252	299165.	23963.10	1462.	1462. 1462.	12527.85	
	DONPARMI	232	299103.	23963.10	1462.	1462.	0.00	50385.11
KB								30303.11
	40FPKKWH	444	173699.	12488.97	787.	787.	0.00	
,	BONPKDMHTG	228	269534.	0.00	1462.	1462.	12527.85	
	BONPKKWH	228	269534.	21589.66	1462.	1462.	0.00	
								46606.48
IAR	ACEDERANA	468	182063.	13090.36	707	202		
	40FPKKWH BONPKDMHTG	276	325872.	0.00	787. 1460.	787.	0.00	
	BONPKKWH	276	325872. 325872.	26102.35	1460.	1460. 1460.	12515.29	
	BOMERAND	2/0	343014.	20102.33	1460.	1400.	0.00	51708.00
PR								32,00.00
	40FPKKWH	468	174886.	12574.32	787.	787.	0.00	
	BONPKDMHTG	252	296759.	0.00	1450.	1450.	12427.03	
	BONPKKWH	252	296759.	23770.44	1450.	1450.	0.00	
								48771.78
(AY	40FPKKWH	492	216930.	15597.26	1014.	1014.	0.00	
	EONPEDMETG	252	332124.	0.00	1907.	1907.	16346.86	
	BONPKKWH	252	332124.	26603.10	1907.	1907.	0.00	
	20112101112		33222	20003.20	1307.	1307.	0.00	58547.22
IUN								
	40FPKKWH	456	263536.	18948.23	1047.	1047.	0.00	
	BONPKDMCL	264	405134.	0.00	1988.	1988.	18829.02	
	BONPKKWH	264	405134.	32451.24	1988.	1988.	0.00	
UL.								70228.48
-011	40FPKKWH	504	302262.	21732.64	1032.	1032.	0.00	
	BONPKDMCL	240	374111.	0.00	1983.	1983.	18782.13	
	BONPKKWH	240	374111.	29966.33	1983.	1983.	0.00	
								70481.09
UG								
	4OFPKKWH	468	275198.	19786.74	1054.	1054.	0.00	
	EONPKDMCL	276 276	430204.	0.00	1986.	1986.	18807.44	
	BONPKKWH	2/6	430204.	34459.33	1986.	1986.	0.00	73053.52
BP								/3053.52
_	40FPKKWH	468	255721.	18386.33	1025.	1025.	0.00	
	BONPKDMCL	252	370874.	0.00	1915.	1915.	18133.75	
	BONDKKMH	252	370874.	29707.04	1915.	1915.	0.00	
CT								66227.12
CI.	40FPKKWH	504	213724.	15366.73	900.	900.	0.00	
	EONPROMHTG	240	304963.	0.00	1801.	1801.	15430.54	
	BONPKKWH	240	304963.	24427.50	1801.	1801.	0.00	
					2002.	1001.	0.00	55224.77

ENTECH ENGINEERING EZDOE - ELITE SOFTWARE DEVELOPMENT INC DOE-2.1D 6/18/1996 10:22:31 EDL RUN 1 READING, PA 19603 4130.05 FT. MONMOUTH - MYER CENTER, NJ FTMOACO - SIM MCA H20 ONLY W/OA SCHD1 REPORT- ES-E SUMMARY OF ELECTRICITY CHARGES

-----CONTINUED-----CHARGE-CONSUMPTION Energy MEASURED BILLING DEMAND TOTAL ASSIGNMENT BY C-A MONTH LENGTH CHARGE DEMAND DEMAND CHARGE CHARGES (U-NAME) (HR/MO) (KWH) (\$) (KN) (ICW) (\$) (\$) -----NOV 480 40FPKKWH 182353. 13111.20 787. 787. 0.00 BONPKDMHTG 240 283017. 0.00 1459. 1459. 12507.81 BONPKKWH 283017. 22669.67 1459. 1459. 0.00 48288.68 DEC 40FPKKWH 492 192529. 787. 13842.83 787. 0.00 BONPKOMHTG 252 298773. 0.00 1462. 1462. 12527.85 BONPKKWH 252 298773. 23931.73 1462. 1462. 0.00 50302.42 TOTAL 6616680. 508461.22 181363.42 689824.69





September 27, 1995

Entech #4130.05

Director of Public Works ATTN: SELF-PW-E (Mr. Dooney) Building 167 Riverside Avenue Fort Monmouth, New Jersey 07703-5108

Re: Indefinite Delivery-Type Contract No. DACA01-94-D-0037 Limited Energy Study, Myer Center, Ft. Monmouth, N.J.

Dear Mr. Dooney:

As requested at our meeting on August 8, 1995, we are furnishing additional scope definitions for the Myer Center energy study. During our discussions you requested that the energy study not address just the steam system but also other major HVAC systems in the building. This concern was further substantiated by the project currently out for bidding to provide new hot water boilers to feed the two-pipe fan coil system. This project greatly reduces the need for steam to just a few users. In summary, Ft. Monmouth is already taking steps to replace the major steam load in Building 2700 and thus leaves limited options for additional energy savings. Future energy and conservation may, therefore, be more readily achievable via modifications/upgrades to other major HVAC systems.

In order to better accommodate your needs, we offer the following preliminary list of Energy Conservation Opportunities (ECOs) which could be considered and of which include other major HVAC systems serving Building 2700. We believe these ECOs would not only met your request, but also be possible within the current authorized contract fee. Please review the following list and forward your comments as soon as possible so that Entech may proceed without any schedule modifications.



#### **ECO** List

4 South Fourth Street P.O. Box 32

Reading Pennsylvania 19603

- Steam to Hot Water Heating Conversion
- Decentralize Steam Distribution System
- Direct Fired Domestic Hot Water Generator
- Decentralize Domestic Hot Water Distribution System
- Convert Steam Source HVAC Equipment to Hot Water

Office 610.373.6667

Director of Public Works

ATTN: SELF-PW-E (Mr. Dooney)

September 22, 1995

Page -2-

- Occupied/Unoccupied Cycle Controls for HVAC Systems
- Cooling Tower Optimization
- Thermal Storage for Chilled Water System
- Efficient Chillers
- Convert Chilled Water System to Variable Flow Primary/Secondary System
- Automated Outside Air Reset Control for Hot Water Distribution Temperature
   Control
- Replace Domestic Hot Water Recirculation Pumps

I have discussed this change with Mr. James Kendall in Norfolk and he agrees with the revision to the project scope. A copy of our telephone conversation is attached for your records.

Should you have any questions or wish to discuss the preceding information, please do not hesitate to call. In addition, please find, attached, a project schedule for review and comment.

Sincerely,

Edward L. Caulkins, P.E.

Project Manager

cc:

Mr. James Kendall

& Caulta

Mr. Charles Konig

Mr. Battaglia

Mr. Kapur

Mr. William McMahon

G:/PROJECTS:4130.05/WP/DOONEY.L01

## ENTECH ENGINEERING INC. TELEPHONE AND CONFERENCE MEMORANDUM

DATE: 9-20-95

BY: Ed Caulkins

PROJECT NO.: 4130.05

PERSON(S): Jim Kendall

TELEPHONE NO: 804-441-7403

REPRESENTING: Norfolk District

PHONE CODE: 036

SUBJECT: Scope of Study

NOTES: Discussed Kevin Dooney's request that Entech not focus totally on steam plant but cover other HVAC systems as well. The steam issue should not be removed from the study but should be reduced in effort & comprehensiveness to accommodate other HVAC systems which might offer significant energy savings.

Jim stated that as long as steam is not totally eliminated from the project scope, the revised focus is not a problem. There is no modification to the contract scope document required. Entech should forward a copy of the letter re: this change to Jim and Mr. Battaglia. Acceptance of this letter by Kevin Dooney is justification for modifications.

					1995			1995			1996			9661
		Duration	Start Date	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
	Notice to Proce	0.00 Weeks	6/14/95											
2	Kickoff Meeting	0.00 Days	7/21/95	•		•	•	•	•			•	•	_
_	Data Gathering	4.00 Weeks	8/ 8/95	•	•		.⊠		•	•	•	•	•	
4	Site Inspection	12.00 Weeks	8/ 8/95	•	•		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXXXX	نھا. اھا۔		•	•	•	_
S	Heat Gain/Heat	2.00 Weeks	9/18/95	•	•	•	· 💥	• <del>ggreet</del> s	•	•	•		•	
9	Building Simula	2.00 Weeks	9/18/95	•	•	•	· <b>XX</b>	· ===	-	•	•	•	• _	
7	Distribution Sy	2.00 Weeks	10/ 2/95	•	•	•	•	×××	•		•			
œ	Boiler System L	2.00 Weeks	10/ 9/95	•	•	•		<b>X</b> X			•	•	•	_
6	Fuel Use Analys	1.00 Week	9/11/95	•	•	•	⊠	•	•	•	•	•		
2	Regression Anal	2.00 Weeks	11/ 6/95	•	•	•	•	•			•	•	•	_
=	Balance Supply/	1.00 Week	10/23/95	•	•	•	•		•		••	•	•	
12	Utility Rate An	1.00 Week	9/ 5/95	•	•				.•	•	•	•	•	
=	Draft ECO's	1.20 Week	9/ 4/95	•	•	•	×	•	•		•	•	•	_
Ξ	Preliminary ECO	10.00 Weeks	10/ 2/95	•	•	•		×××××		.&	•	•	•	
22	Executive Summa	1.00 Week	2/ 5/96	•	•	•		•		<b>.</b>			•	
12	Methodology	1.00 Week	9/11/95	•	•	•	⊠	•	•	•	•	<b>!</b>	•	
Ξ	Pacility Descri	2.00 Weeks	9/11/95	•	•	•		•	•			•	•	_
<b>=</b>	Energy Use	2.00 Heeks	9/11/95	•		•	<b>XX</b>	!		•	•	•	•	
5	ECO's Recommend	5.00 Weeks	1/ 1/96	•	•	•	•	•			XXXXXXX	·Æ	•	_
20	ECO's Not Recom	5.00 Weeks	1/ 1/96	•	•	•				•	XXXXXXX	ŀÆ	•	_
71	Life Cycle Cost	2.00 Weeks	1/ 5/96	•	•	•	•	•		•	<b>₩</b>	<b>]</b> -	•	
22	Discussion	3.00 Weeks	1/15/96	•		•	•	•	•	•		· <b>8</b>	•	
23	Attachments	2.00 Weeks	1/ 5/96	•	•	•	•	•	•		×××	<b>]</b> -	•	
77	Interim Submitt	0.00 Weeks	12/14/95	•	•	•	•	•	•			•	•	
22	Interim Review	1.00 Week	12/14/95	•	-		•		•		•	•	•	_
22	Interim Present	0.00 Weeks	12/21/95	•	•	•	•	•	•		•	•	•	
23	Prefinal Submit	0.00 Weeks	2/14/96	•	•	•	•	•				=	•	
87	Pt. Monmouth Co	3.00 Weeks	2/15/96	•	•	•	•	•	•		•			
£	Incorporate Rev	3.00 Weeks	36/1 /8	•	•	•	•		•					
2	Final Submissio	0.00 Weeks	4/ 1/96	•	•		•	•	•	•				.=
Non	Noncritical xxxxx	xxx Critical	cal <b>xxxxxx</b>	XXX					P.O.	Fort Monm	Monmonth			
Slack	ck	Milestone		П					Limited		av Study	2,		
Pro	Project: SCHE	SCHEDULE Date:	Sep 21,	1995 9;	9:59 AM						ina fe	<del>,</del>		

#### Consulting Engineers

Principals: Daniel J. Castellant, PE Thomas M. McManon, PE William M. McManon Jr., PE

# ENTECH

### **FAX TRANSMITTAL**

	DATE: 0.2.95 TIME:
	ENTECH PROJECT #/NAME:
	PLEASE DELIVER THE FOLLOWING PAGE(S) TO:
	NAME: MK KEVIH DOONEY
	FIRM: FT MOHMOUTH
	FAX #: 908 - 532 - 2367. PHONE CODE: 036
	FROM: ED CALLYLLES
,	REMARKS: Keuh,
	PLEASE CALL ME APPENLYOU
	HAVE A CHANCE TO REVIEW
	Thanks
	Original Sent Via:
·	□ U.S. Mail
À	Overnight Delivery Service
4 South Fourth Street	FAX Only, Originals Not Sent
P.O. Box 32 Reading	WE ARE TRANSMITTING PAGE(S) (INCLUDING COVER PAGE)
Pennsylvania 19603 Office 610,373,6667	If you do not receive all the pages, please call (610) 373-6667.

Fax 610.373.7537

Consulting Engineers

Principals:
Daniel J. Castellani, PE
Thomas M. McMahon, PE
William M. McMahon Jr., PE



August 25, 1995

Entech #4130.05

Mr. Jim Kendall Norfolk District Attn: CENAO-EN-DE, Jim Kendall 803 Front Street Norfolk, VA 23510

Re: Ft. Monmouth - DACA01-94-D-0037

Dear Jim:

I received a fax from Mr. Kapur of HQ, Forces Command, indicating that Ft. Monmouth is not a Forscom Installation. This fax was in the form of the Entech Meeting Minutes cover sheet with the previous note. I interpret this to mean that Mr. Kapur has no responsibility regarding this project and does not require copies of further communications. The contract documents list Mr. Kapur, therefore I am forwarding this to you for your input. Should we remove Mr. Kapur from the correspondence list or add someone else in his place? Please let me know what you would like us to do.

Quella

Sincerely,

Edward L. Caulkins, P.E.

Project Manager

cc: Bill McMahon - Entech



4 South Fourth Street P.O. Box 32 Reading Pennsylvania 19603

Office 510.373.6667

Fax 610.373.7537

April 1995

# GENERAL SCOPE OF WORK FOR A LIMITED ENERGY STUDY

Performed as part of the ENERGY ENGINEERING ANALYSIS PROGRAM (EEAP)

#### SCOPE OF WORK FOR A LIMITED ENERGY STUDY

#### TABLE OF CONTENTS

- 1. BRIEF DESCRIPTION OF WORK
- 2. GENERAL
- 3. PROJECT MANAGEMENT
- 4. SERVICES AND MATERIALS
- 5. PROJECT DOCUMENTATION
  - 5.1 ECIP Projects
  - 5.2 Non-ECIP Projects
  - 5.3 Nonfeasible ECOs
- 6. DETAILED SCOPE OF WORK
- 7. WORK TO BE ACCOMPLISHED
  - 7.1 Review Previous Studies
  - 7.2 Perform a Limited Site Survey
  - 7.3 Reevaluate Selected Projects
  - 7.4 Evaluate Selected ECOs
  - 7.5 Combine ECOs into Recommended Projects
  - 7.6 Submittals, Presentations and Reviews

#### **ANNEXES**

- A DETAILED SCOPE OF WORK
- **B-EXECUTIVE SUMMARY GUIDELINE**
- C REQUIRED DD FORM 1391 DATA

- 1. BRIEF DESCRIPTION OF WORK: The Architect-Engineer (AE) shall:
- 1.1 Review the previously completed Energy Engineering Analysis Program (EEAP) study which applies to the specific building, system, or energy conservation opportunity (ECO) covered by this study.
- 1.2 Perform a limited site survey of specific buildings or areas to collect all data required to evaluate the specific ECOs included in this study.
- 1.3 Reevaluate the specific project or ECO from the previous study to determine its economic feasibility based on revised criteria, current site conditions and technical applicability.
- 1.4 Evaluate specific ECOs to determine their energy savings potential and economic feasibility.
  - 1.5 Provide project documentation for recommended ECOs as detailed herein.
- 1.6 Prepare a comprehensive report to document all work performed, the results and all recommendations.

#### 2. GENERAL

- 2.1 This study is limited to the evaluation of the specific buildings, systems, or ECOs listed in Annex A, DETAILED SCOPE OF WORK.
- 2.2 The information and analysis outlined herein are considered to be minimum requirements for adequate performance of this study.
- 2.3 For the buildings, systems or ECOs listed in Annex A, all methods of energy conservation which are reasonable and practical shall be considered, including improvements of operational methods and procedures as well as the physical facilities. All energy conservation opportunities which produce energy or dollar savings shall be documented in this report. Any energy conservation opportunity considered not feasible shall also be documented in the report with reasons for elimination.
  - 2.4 The study shall consider the use of all energy sources applicable to each building, system, or ECO.
- 2.5 The "Energy Conservation Investment Program (ECIP) Guidance", described in letter from DAIM-FDF-U, dated 10 Jan 1994 (including current updates) establishes criteria for ECIP projects and shall be used for performing the economic analyses of all ECOs and projects. The program, Life Cycle Cost In Design (LCCID), has been developed for performing life cycle cost calculations in accordance with ECIP guidelines and is referenced in the ECIP Guidance. If any program other than LCCID is proposed for life cycle cost analysis, it must use the mode of calculation specified in the ECIP Guidance. The output must be in the format of the ECIP LCCA summary sheet, and it must be submitted for approval to the Contracting Officer.
- 2.6 Computer modeling will be used to determine the energy savings of ECOs which would replace or significantly change an existing heating, ventilating, and air conditioning (HVAC) system. The requirement to use computer modeling applies only to heated and air conditioned or air conditioned only buildings which exceed 8,000 square feet or heated-only buildings in excess of 20,000 square feet. Modeling will be done using a professionally recognized and proven computer program or programs that integrate architectural features with air conditioning, heating, lighting and other energy producing or consuming systems. These programs will be capable of simulating the features, systems, and thermal loads of the building under study. The program

will use established weather data files and may perform calculations on a true hour-by-hour basis or may condense the weather files and the number of calculations into several "typical" days per month. The Detailed Scope of Work, Annex A, will list programs that are acceptable to the Contracting Officer. If the AE desires to use a different program, it must be submitted for approval with a sample run, an explanation of all input and output data, and a summary of program methodology and energy evaluation capabilities.

- 2.7 Energy conservation opportunities determined to be technically and economically feasible shall be developed into projects acceptable to installation personnel. This may involve combining similar ECOs into larger packages which will qualify for ECIP or FEMP funding, and determining in coordination with installation personnel the appropriate packaging and implementation approach for all feasible ECOs.
- 2.7.1 Projects which qualify for ECIP funding shall be identified, separately listed, and prioritized by the Savings to Investment Ratio (SIR).
  - 2.7.2 All feasible non-ECIP projects shall be ranked in order of highest to lowest SIR.
- 2.7.3 At some installations Energy Conservation and Management (ECAM) funding will be used instead of ECIP funding. The criteria for each program is the same. The Director of Public Works will indicate which program is used at this installation. This Scope of Work mentions only ECIP, however, ECAM is also meant.
- 2.8 Metric Reporting Requirements: In this study, the analyses of the ECOs may be performed using English or Metric units as long as they are consistent throughout the report. The final results of energy savings for individual recommended projects and for the overall study will be reported in units of MegaBTU per year and in MegaWatts per year. Paragraph 7.6.2 details requirements for the contents of the final submittal.

#### 3. PROJECT MANAGEMENT

- 3.1 Project Managers. The AE shall designate a project manager to serve as a point of contact and liaison for work required under this contract. Upon award of this contract, the individual shall be immediately designated in writing. The AE's designated project manager shall be approved by the Contracting Officer prior to commencement of work. This designated individual shall be responsible for coordination of work required under this contract. The Contracting Officer will designate a project manager to serve as the Government's point of contact and liaison for all work required under this contract. This individual will be the Government's representative.
- 3.2 <u>Installation Assistance</u>. The Commanding Officer or authorized representative at the installation will designate an individual to assist the AE in obtaining information and establishing contacts necessary to accomplish the work required under this contract. This individual will be the installation representative.
- 3.3 <u>Public Disclosures</u>. The AE shall make no public announcements or disclosures relative to information contained or developed in this contract, except as authorized by the Contracting Officer.
- 3.4 <u>Meetings</u>. Meetings will be scheduled whenever requested by the AE or the Contracting Officer for the resolution of questions or problems encountered in the performance of the work. The AE's project manager and the Government's representative shall be required to attend and participate in all meetings pertinent to the work required under this contract as directed by the

Contracting Officer. These meetings, if necessary, will be in addition to the presentation and review conferences.

3.5 <u>Site Visits, Inspections, and Investigations</u>. The AE shall visit and inspect/investigate the site of the project as necessary and required during the preparation and accomplishment of the work.

#### 3.6 Records

- 3.6.1 The AE shall provide a record of all significant conferences, meetings, discussions, verbal directions, telephone conversations, etc., with Government representative(s) relative to this contract in which the AE and/or designated representative(s) thereof participated. These records shall be dated and shall identify the contract number, and modification number if applicable, participating personnel, subject discussed and conclusions reached. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the records.
- 3.6.2 The AE shall provide a record of requests for and/or receipt of Government furnished material, data, documents, information, etc., which if not furnished in a timely manner, would significantly impair the normal progression of the work under this contract. The records shall be dated and shall identify the contract number and modification number, if applicable. The AE shall forward to the Contracting Officer within ten calendar days, a reproducible copy of the record of request or receipt of material.
- 3.7 <u>Interviews</u>. The AE and the Government's representative shall conduct entry and exit interviews with the Director of Public Works before starting work at the installation and after completion of the field work. The Government's representative shall schedule the interviews at least one week in advance.
- 3.7.1 Entry. The entry interview shall describe the intended procedures for the survey and shall be conducted prior to commencing work at the facility. As a minimum, the interview shall cover the following points:
  - a. Schedules.
  - b. Names of energy analysts who will be conducting the site survey.
  - c. Proposed working hours.
  - d. Support requirements from the Director of Public Works.
- 3.7.2 Exit. The exit interview shall be held when the field work is essentially complete; it shall briefly describe the items surveyed and probable areas of energy conservation. The interview shall also solicit input and advice from the Director of Public Works.
- 4. <u>SERVICES AND MATERIALS</u>. All services, materials (except those specifically enumerated to be furnished by the Government), labor, supervision, and travel necessary to perform the work and render the data required under this contract are included in the lump sum price of the contract.
- 5. <u>PROJECT DOCUMENTATION</u>. All energy conservation opportunities which the AE has considered shall be included in one of the following categories and presented in the report as such:

- 5.1 ECIP Projects. To qualify as an ECIP project, an ECO, or several ECOs which have been combined, must have a construction cost estimate greater than \$300,000, a Savings to Investment Ratio (SIR) greater than 1.25 and a simple payback period of less than ten years. The overall project and each discrete part of the project shall have an SIR greater than 1.25. All projects meeting the above criteria shall be arranged as specified in paragraph 2.7.1 and shall be provided with programming documentation. Programming documentation shall consist of a DD Form 1391 and life cycle cost analysis (LCCA) summary sheet(s) (with necessary backup data to verify the numbers presented). A life cycle cost analysis summary sheet shall be developed for each ECO and for the overall project when more than one ECO are combined. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs.
- 5.2 Non-ECIP Projects. Projects which do not meet ECIP criteria with regard to cost estimate, but which have an SIR greater than 1.25 shall be documented. Projects or ECOs in this category shall be arranged as specified in paragraph 2.7.2 and shall be provided with the following documentation: the life cycle cost analysis (LCCA) summary sheet completely filled out, a description of the work to be accomplished, backup data for the LCCA (energy savings calculations and cost estimate), and the simple payback period. The energy savings for projects consisting of multiple ECOs must take into account the synergistic effects of the individual ECOs. In addition these projects shall have the necessary documentation prepared, as required by the Government's representative, for one of the following categories:
- a. Federal Energy Management Program (FEMP) Projects. A FEMP (or O&M Energy) project is one that results in needed maintenance or repair to an existing facility, or replaces a failed or failing existing facility, and also results in energy savings. The criteria are similar to the criteria for ECIP projects, i.e.,  $SIR \ge 1.25$ , and simple payback period of less than ten years. Projects with a construction cost estimate up to \$1,000,000 shall be documented as outlined in par 5.2 above; projects over \$1,000,000 shall be documented on 1391s. In the FEMP program, a system may be defined as "failed or failing" if it is inefficient or technically obsolete. However, if this strategy is used to justify a proposed project, the equipment to be replaced must have been in use for at least three years.
- b. Low Cost/No Cost Projects. These are projects which the Director of Public Works (DPW) can perform using his resources. Documentation shall be as required by the DPW.
- 5.3 <u>Nonfeasible ECOs</u>. All ECOs which the AE has considered but which are not feasible, shall be documented in the report with reasons and justifications showing why they were rejected.
- 6. DETAILED SCOPE OF WORK. The Detailed Scope of Work is contained in Annex A.

#### 7. WORK TO BE ACCOMPLISHED.

- 7.1 Review Previous Studies. Review the previous EEAP study which applies to the specific building, system, or ECO covered by this study. This review should acquaint the AE with the work that has been performed previously. Much of the information the AE may need to develop the ECOs in this study may be contained in the previous study.
- 7.2 Perform a Limited Site Survey. The AE shall obtain all necessary data to evaluate the ECOs or projects by conducting a site survey. However, the AE is encouraged to use any data that may have been documented in a previous study. The AE shall document his site survey on forms developed for the survey, or on standard forms, and submit these completed forms as part of the report. All test and/or measurement equipment shall be properly calibrated prior to its use.

- 7.3 Reevaluate Selected Projects. The AE shall reevaluate the projects and ECOs listed in Annex A. These projects and ECOs were previously identified but have not been accomplished or have been only partially accomplished. If the project or ECO is acceptable as is, that is, there are no changes to the basic project or ECO, the energy savings shown in the previous project may be accepted as accurate but the energy cost and construction cost estimates shall be updated based on the most current data available. With the above information the project shall then be analyzed based on current ECIP criteria. If the project or ECO is basically acceptable but some of the buildings in the original project have been deleted or new buildings can be added, the necessary changes shall be made to the energy savings, the energy costs and construction costs shall be updated, and the revised project or ECO shall then be analyzed using current ECIP guidance. If the original project or ECO has had numerous changes made to it so that all of the numbers are suspected of being inaccurate, but the project or ECO is still considered feasible, the AE shall develop the project from the beginning and analyze it with the current ECIP guidance. These projects shall be separately listed in the report.
- 7.4 Evaluate Selected ECOs. The AE shall analyze the ECOs listed in Annex A. These ECOs shall be analyzed in detail to determine their feasibility. Savings to Investment Ratios (SIRs) shall be determined using current ECIP guidance. The AE shall provide all data and calculations needed to support the recommended ECO. All assumptions and engineering equations shall be clearly stated. Calculations shall be prepared showing how all numbers in the ECO were figured. Calculations shall be an orderly step-by-step progression from the first assumption to the final number. Descriptions of the products, manufacturers catalog cuts, pertinent drawings and sketches shall also be included. A life cycle cost analysis summary sheet shall be prepared for each ECO and included as part of the supporting data.
- 7.5 Combine ECOs Into Recommended Projects. During the Interim Review Conference, as outlined in paragraph [7.6.1], the AE will be advised of the DPW's preferred packaging of recommended ECOs into projects for implementation. Some projects may be a combination of several ECOs, and others may contain only one. These projects will be evaluated and arranged as outlined in paragraphs 5.1, 5.2, and 5.3. Energy savings calculations shall take into account the synergistic effects of multiple ECOs within a project and the effects of one project upon another. The results of this effort will be reported in the Final Submittal per par [7.6.2].
- 7.6 Submittals, Presentations and Reviews. The work accomplished shall be fully documented by a comprehensive report. The report shall have a table of contents and shall be indexed. Tabs and dividers shall clearly and distinctly divide sections, subsections, and appendices. All pages shall be numbered. Names of the persons primarily responsible for the project shall be included. The AE shall give a formal presentation of the interim submittal to installation, command, and other Government personnel. Slides or view graphs showing the results of the study to date shall be used during the presentation. During the presentation, the personnel in attendance shall be given ample opportunity to ask questions and discuss any changes deemed necessary to the study. A review conference will be conducted the same day, following the presentation. Each comment presented at the review conference will be discussed and resolved or action items assigned. It is anticipated that the presentation and review conference will require approximately one working day. The presentation and review conference will be at the installation on the date agreeable to the Director of Public Works, the AE and the Government's representative. The Contracting Officer may require a resubmittal of any document(s), if such document(s) are not approved because they are determined by the Contracting Officer to be inadequate for the intended purpose.
- 7.6.1 Interim Submittal. An interim report shall be submitted for review after the field survey has been completed and an analysis has been performed on all of the ECOs. The report shall indicate the work which has been accomplished to date, illustrate the methods and justifications of the approaches taken and contain a plan of the work remaining to complete the study.

Calculations showing energy and dollar savings, SIR, and simple payback period of all the ECOs shall be included. The results of the ECO analyses shall be summarized by lists as follows:

- a. All ECOs eliminated from consideration shall be grouped into one listing with reasons for their elimination as discussed in par 5.3.
- b. All ECOs which were analyzed shall be grouped into two listings, recommended and non-recommended, each arranged in order of descending SIR. These lists may be subdivided by building or area as appropriate for the study.

The AE shall submit the Scope of Work and any modifications to the Scope of Work as an appendix to the report. A narrative summary describing the work and results to date shall be a part of this submittal. At the Interim Submittal and Review Conference, the Government's and AE's representatives shall coordinate with the Director of Public Works to provide the AE with direction for packaging or combining ECOs for programming purposes and also indicate the fiscal year for which the programming or implementation documentation shall be prepared. The survey forms completed during this audit shall be submitted with this report. The survey forms only may be submitted in final form with this submittal. They should be clearly marked at the time of submission that they are to be retained. They shall be bound in a standard three-ring binder which will allow repeated disassembly and reassembly of the material contained within.

- 7.6.2 Final Submittal. The AE shall prepare and submit the final report when all sections of the report are 100% complete and all comments from the interim submittal have been resolved. The AE shall submit the Scope of Work for the study and any modifications to the Scope of Work as an appendix to the submittal. The report shall contain a narrative summary of conclusions and recommendations, together with all raw and supporting data, methods used, and sources of information. The report shall integrate all aspects of the study. The recommended projects, as determined in accordance with paragraph 5, shall be presented in order of priority by SIR. The lists of ECOs specified in paragraph [7.6.1] shall also be included for continuity. The final report and all appendices shall be bound in standard three-ring binders which will allow repeated disassembly and reassembly. The final report shall be arranged to include:
- a. An Executive Summary to give a brief overview of what was accomplished and the results of this study using graphs, tables and charts as much as possible (See Annex B for minimum requirements).
- b. The narrative report describing the problem to be studied, the approach to be used, and the results of this study.
  - c. Documentation for the recommended projects (includes LCCA Summary Sheets).
  - d. Appendices to include as a minimum:
    - 1) Energy cost development and backup data
    - 2) Detailed calculations
    - 3) Cost estimates
    - 4) Computer printouts (where applicable)
    - 5) Scope of Work

#### ANNEX A

#### DETAILED SCOPE OF WORK

#### 1. LOCATION

A. General description. The Architect Engineer (AE) shall furnish all services, materials, supplies, labor, equipment, investigations, studies, and travel as required in connection with the feasibility study for the below identified project in accordance with the contract and all furnished instructions:

INSTALLATION

DESCRIPTION

Fort Monmouth, NJ

Limited Energy Study (Bldg 2700)

- 2. AUTHORIZATION (Not Required)
- 3. STUDY INSTRUCTIONS

If the Design Manuals, Guide Specifications, and/or Project Engineering Instructions do not cover a specific condition in question, the AE shall contact the Contracting Officer before proceeding. If there is a conflict in Engineering Instructions or other reference data, such questions or conflicts should be brought to the attention of the Contracting Officer before proceeding.

X

#### 4. INSTALLATION REPRESENTATIVE

The installation representative for this contract will be Mr. Kevin Dooney, Director of Public Works.

#### 5. COMPLETION SCHEDULE

The following schedule shall be used as a guide in approving payments on this contract. The interim report for shall be due not later than 180 days after Notice to Proceed. The prefinal report shall be due not later than 45 days after the interim report review conference. The final report shall be due not later than 30 days after the prefinal review conference.

#### 6. METHOD OF PAYMENT

A. Title I. The AE shall prepare and submit to the US Army Engineer District, Norfolk, partial payment estimates in accordance with the attachment entitled "Instructions for Completion of ENG Form 93". Payment under this contract, for which property or services are provided in a series of partial executions or deliveries, will be made within 30 days after receipt of an invoice which has been properly executed by the AE.

- B. Additional Conferences. Payment for furnishing the services of technically qualified representatives to attend additional conferences, when so requested in writing by the Contracting Officer, will be made at a rate per hour for the discipline involved plus travel expenses computed in accordance with Government Joint Travel Regulations in effect at the time travel is performed and actual cost of transportation.
- 7. The simulation programs acceptable for use in this study are listed below. Any substitutes must be submitted and approved as outlined in the basic scope of work.
  - A. Building Loads and System Thermodynamics (BLAST)
  - B. DOE 2.1B
  - C. Carrier E20 of Hourly Analysis Program (HAP)
  - D. Trane Air-Conditioning Economics (TRACE)
  - E. Beacon
- 8. LIFE CYCLE COSTING IN DESIGN (LCCID)

A computer program titled Life Cycle Costing in Design (LCCID) is available from the BLAST Support Office in Urbana. Illinois for a nominal fee. This computer program can be used for performing the economical calculations for ECIP and non-ECIP ECOS. The AE is encouraged to obtain and use this computer program. The BLAST Supporting Office can be contacted at 144 Mechanical Engineering Building, 1206 West Green Street, Urbana, Illinois 61801. The telephone number is (217) 333-3977 or (800) 842-5278.

#### 9. FACILITY SURVEY

The Architect-Engineer (AE) shall conduct a survey of the buildings and building systems listed in accordance with HNDS86-188-ED-ME and as described herein. Each building/system shall be observed while operating. The survey shall include and document the following items:

- A. The central steam plant including all boilers, auxiliaries, fuel systems, stack(s), internal steam piping, and physical structures.
- B. The steam distribution system from the central steam plant to the outer wall of all buildings served by steam. The system will include piping, insulation, valves, controls, traps, vents, and associated structures. Special interest shall be given to equipment life, condition, and capacity.
- C. Condensate return system similar to the steam system.
- D. The chilled water system as it relates to reheating.

due to overheating

- E. Facilities which consume steam including peak steam demand, overall yearly use, and types of equipment served. This shall be limited to the overall system energy use and not to any particular individual user.
- F. Those areas that may be needed for supplemental or auxiliary steam plants.
- G. The fuel supply as it relates to the boiler plant operations.
- H. The environmental equipment related to the boiler plant operations.
- 10. AUTOMATED REVIEW MANAGEMENT SYSTEM (ARMS) Not Required
- 11. GOVERNMENT-FURNISHED DATA
- A. AR 415-15 Military Construction, Army (MCA) Program Development.
- B. AR 415-20 Project Development and Design Approval.
- C. TM 5-800-3 Project Development Brochure.
- D. Engineering Instructions (as applicable).
- E. Previous studies related to application of Steam at this site (where applicable).

# 12. SUBMITTAL REQUIREMENTS

# COPIES REQUIRED

	(Correspondence): Interim: Final	Executive
<u>ORGANIZATION</u>	and Prefinal Review	Summary, <u>Only</u>
Norfolk District Attn: CENAO-EN-DE, Jim Kendall 803 Front Street Norfolk, VA 23510	5	
Headquarters, Forces Command Attn: FCEN-RDF, Mr. Naresh Kapu Energy Office, Building 200 Ft. McPherson, GA 30330-6000	nr .	
U.S. Army Engineer District, Mobil Attn: CESAM-EN-DM (Mr. Battagl Post Office Box 2288 109 St. Joseph Street Mobile, AL 36602		
Commander USAED, North Atlantic ATTN: CENAD-EN-MM (Mr Wong 90 Church Street New York, NY 10007	g)	1
Commander US Army Corps of Engineers ATTN: CEMP-ET (Mr Gentil) 20 Massachusetts Avenue NW Washington, DC, 20314 1000.		1 (Final Only)
Commander US Army Logistics Evaluation Agen ATTN: LOEA-PL (Mr Keath) New Cumberland Army Depot New Cumberland, PA, 17070 5007	ncy	1 (Final Only)
Director of Public Works ATTN: SELFM-PW-E (Mr Dooney) Bldg 167 (Riverside Ave.) Fort Monmouth, NJ, 07703 5108	2	2

#### 13. ANALYSIS OF SYSTEMS

The Architect Engineer (AE) will utilize standard methods of engineering calculations to understand current energy consumption in such detail as to permit identification of further improvement options.

HEAT LOSS CALCULATIONS A calculation of each facility's theoretical energy use due to building heat loss and heat gain will be made using energy models derived from ASHRAE standards.

STEAM DISTRIBUTION LOSSES Based upon the known arrangement and condition of the steam lines, a calculation shall be made showing the average rate of distribution losses and the overall costs associated with normal operation.

BOILER SYSTEM LOSSES Together with the boiler efficiency tests provide a calculation that will show total boiler system losses including stack losses, skin losses, partial load losses, blowdown losses and others that may apply.

<u>CONDENSATE SYSTEM LOSSES</u> Review the condensate return records and provide a calculation showing the costs of condensate not returned. Provide areas of loss, estimated loss quantities and costs

<u>REGRESSION ANALYSIS</u> Provide a calculation using historical energy consumption, weather data, occupancy, and other variables for potential mathematical correlation to support other energy calculations.

BALANCE OF ENERGY SUPPLY WITH USERS/LOSSES Provide a calculation by combining all calculations made in this study to match actual steam production with calculated energy use.

<u>UTILITY RATE ANALYSIS</u> Provide a separate calculation for each type of energy conserved-gas, oil, and electric. The incremental cost of fuel shall be used for all energy savings options.

<u>CHECK REGULATORY REQUIREMENTS</u> Provide a check of all regulatory bodies affecting emissions to the air or water discharges. Provide any recommendations made in compliance with such regulatory agencies.

#### 14. METHOD

The Architect Engineer (AE) shall collect information on the existing boiler plant and steam system operations in order to have a reasonable understanding of operations, cost, energy use, problems, limitations, and future need. This shall be accomplished in the following steps.

<u>DATA GATHERING</u> From the start of the study the AE shall collect available data that will assist in energy use evaluations and recommendations. A partial list of data that shall be sought is as follows:

- Energy bills and summaries
- Schedules
- Steam line drawings
- Floor plans or building data /
- Site plans
- Maintenance records
- Steam load profiles
- Boiler plant operator logs
- Temperature histories
- Energy management system profile

NONE

<u>SITE VISITS, INSPECTIONS</u> A team of Engineers shall visit the facility. The inspection will cover areas covered in the study. Operators shall interviewed for operation of individual areas and systems.

Nameplate data will be collected as well as observations of arrangements, physical condition and effectiveness. The following measurements shall be collected:

- Pressure levels -
- Temperatures -
- Electrical loads -
- Steam flow rates —
- Schedules
- Dimensions —

#### 15. ENERGY CONSERVATION OPPORTUNITY INVESTIGATIONS

The AE shall investigate all reasonable options of saving energy and energy-related costs in the operation of the steam production and distribution systems. The approach used to identify each option is briefly described below.

<u>Existing Conditions</u>. This section describes the nature of the existing operating system, its energy use, costs, advantages and disadvantages. Data is usually transferred to this section from the calculations.

<u>Proposed Idea.</u> This section describes improvement ideas that are different from the existing conditions. They may describe a capital projects, modifications, or O&M procedures. The resulting improvements are described, energy costs, quantities and arrangements are briefly noted. Sufficient conceptual studies will be executed to determine feasibility, generate anticipated operational data and estimating values.

<u>Construction Cost Estimate</u>. A feasibility cost estimate in the format prescribed will be performed. The estimate breakdown will be included in the report showing known quantities and costs. Allowances for indirect costs and contingencies are included.

<u>Annual Savings</u>. The report will show the annual savings in energy, quantities, demand, costs, and BTU's. As the report is written, these savings are merely the difference between existing and proposed.

<u>Discussion</u>. This section of the report describes a number of relevant factors including payback period, impact on labor or non-energy costs, O&M concerns, appearances, comfort, life extension, etc. The intent of this section is to address normal impacts or uncertainties of various improvement ideas.

#### 16. REPORT PREPARATION PHASE

The AE will prepare a Energy Analysis report which will fully document the steps previously described. The report will be prepared as follows.

Executive Summary - Section 1. The outline of the executive section is shown on Appendix B.

<u>Methodology - Section 2.</u> This part of the report describes the approach, sequence, assumptions, calculations methods, computer programs, sample outputs, etc. that were used for the study.

<u>Facility Description - Section 3.</u> The report will briefly discuss the buildings and systems covered by the study. It will show floor plans, layout flow diagrams, facility age and condition, major equipment characteristics by system, hours of operation, and concerns expressed by occupants and managers.

<u>Energy Use and Costs - Section 4.</u> The report will describe individual and combined energy and steam consumption for the past two years. The report will describe rate structures, incremental cost calculations, trends, and analysis of use by source. This section critically establishes baseline use of energy for later improvement possibilities.

ECOs Recommended - Section 5. This section describes in detail each of the Energy Conservation Opportunities (ECOs) that are recommended for adoption and funding. The approach to each ECO write-up has been discussed in the preceding section.

ECOs Not Recommended - Section 6. The report will also show ECOs that were investigated but not recommended for adoption due to economics, conflicts, with other ECOs or concerns of operations.

<u>Discussion - Section 7.</u> This part of the report will cover interesting findings of the study not related to other sections of the report. It may include recommendations for non-energy problems, further studies. O&M procedures, training, etc.

Attachments. As part of the report, there will be enclosures for photos, backup calculations, referenced materials such as rate tariffs, codes, etc.

Applications and Funding Requests. As part of this study, applications for project funding will be made in accordance with Section 5, Project Documentation and directions from local authorized persons. The exact level of funding and funding program (expected to be ECIP), will be at the direction of the facility manager.

<u>Suggested Implementation Schedules.</u> The report will also contain a suggested timetable for implementing various projects or programs. This recommendation will be made in consultation with various facility managers.

<u>Operation and Maintenance Instructions.</u> Where appropriate, the study will recommend the formation of procedures or changes to processes that relate to improved energy usage and costs through Operation and Maintenance.

Meetings. At the start of the project, a series of progress meetings will be summarized in minutes prepared and distributed by the AE. There will be a special meeting at the project start and final report phase.

<u>Correspondence.</u> Keeping Fort Monmouth informed of the progress of the conduct of this study shall be a priority. The information shall be transferred in a number of ways.

Progress reports shall be prepared on a monthly basis to highlight the significant events of the prior month. This shall be especially true for actions completed, problems discovered, schedule changes and ECO developments. The progress reports will accompany monthly billings and will form the basis for progress meetings.

Special letters shall be sent for matters of major importance or where schedule delay is not tolerable. This may be true of O&M findings that offer immediate cost savings.

Telephone calls, in-person visits, copies of correspondence and other communications shall be used to keep the post informed of energy analysis underway.

#### ANNEX B

#### **EXECUTIVE SUMMARY GUIDELINE**

- 1. Introduction.
- 2. Building Data (types, number of similar buildings, sizes, etc.)
- 3. Present Energy Consumption of Buildings or Systems Studied.
  - ◆ Total Annual Energy Used.
  - ◆ Source Energy Consumption.

Electricity - KWH, Dollars, BTU
Fuel Oil - GALS, Dollars, BTU, MWH
Natural Gas - THERMS, Dollars, BTU, MWH
Propane - GALS, Dollars, BTU, MWH
Other - QTY, Dollars, BTU, MWH

- 4. Reevaluated Projects Results.
- 5. Energy Conservation Analysis.
  - ◆ ECOs Investigated.
  - ◆ ECOs Recommended.
  - ◆ ECOs Rejected. (Provide economics or reasons)
  - ◆ ECIP Projects Developed. (Provide list)*
  - ♦ Non-ECIP Projects Developed. (Provide list)*
  - Operational or Policy Change Recommendations.
- * Include the following data from the life cycle cost analysis summary sheet: the cost (construction plus SIOH), the annual energy savings (type and amount), the annual dollar savings, the SIR, the simple payback period and the analysis date.
- 6. Energy and Cost Savings.
  - ◆ Total Potential Energy and Cost Savings.
  - ♦ Percentage of Energy Conserved.
- ♦ Energy Use and Cost Before and After the Energy Conservation Opportunities are Implemented.

#### ANNEX C

#### REOUIRED DD FORM 1391 DATA

To facilitate ECIP project approval, the following supplemental data shall be provided:

- a. In title block clearly identify projects as "ECIP."
- b. Complete description of each item of work to be accomplished including quantity, square footage, etc.
- c. A comprehensive list of buildings, zones, or areas including building numbers, square foot floor, etc.
  - (11) Latest MCP Index, essential for projecting costs for project documentation.
- (12) The following items are important and should be provided to the AE to the extent to which they are available:
  - (a) As-built drawings of applicable buildings, equipment, or systems
  - (b) Handbooks or SOPs relating to the operation of applicable equipment or systems.
  - (c) Applicable records of energy or fuel usage.
  - (d) Copies of bills for electrical assumptions before and after improvements.
- (4) Include source of expertise and demonstrate savings claimed. Identify any special or critical environmental conditions such as pressure relationships, exhaust or outside air quantities, temperatures, humidity, etc.
- e. Claims for boiler efficiency improvements must identify data to support present properly adjusted boiler operation and future expected efficiency. If full replacement of boilers is indicated, explain rejection of alternatives such as replace burners, nonfunctioning controls, etc. Assessment of the complete existing installation is required to make accurate determinations of required retrofit actions.
- f. Lighting retrofit projects must identify number and type of fixtures, and wattage of each fixture being deleted and installed. New lighting shall be only of the level to meet current criteria. Lamp changes in existing fixtures is not considered an ECIP type project.
- g. An ECIP life cycle cost analysis summary sheet as shown in the ECIP Guidance shall be provided for the complete project and for each discrete part included in the project. The SIR is applicable to all segments of the project. Supporting documentation consisting of basic engineering and economic calculations showing how savings were determined shall be included.
- h. The DD Form 1391 face sheet shall include, for the complete project, the annual dollar and MBTU savings, SIR, simple amortization period and a statement attesting that all buildings and retrofit actions will be in active use throughout the amortization period.
- i. The calendar year in which the cost was calculated shall be clearly shown on the DD Form 1391.

- j. For each temporary building included in a project, separate documentation is required showing (1) a minimum 10-year continuing need, based on the installation's annual real property utilization survey, for active building retention after retrofit, (2) the specific retrofit action applicable and (3) an economic analysis supporting the specific retrofit.
- k. NAF funded facilities will not be included in an ECIP project without an accompanying statement certifying that utility costs are not reimbursable.
- 1. Any requirements required by ECIP guidance dated 10 Jan 1994 and any revisions thereto. Note that nonescalated costs/savings are to be used in the economic analyses.
- m. The five digit category number for all ECIP projects except for Family Housing is 80000. The category code number for Family Housing projects is 71100.

FACSIMILE HEADER SHEET .							
COMMAND	OFFICE	NAME	OFFICE SYMB	OL	OF	FICE PHONE	FAX
From: U	SAED obile, ?		Battaglia M-EN-DM	_	(33	4) 690-2618	(334) 690-2424
To: USA		Jim :	Kendall O-EN-DE			4) 441-7703	(804) 441-7831
To: ENT	CH ling, pa		LLoyd		(6I)	D) 373-6667	(610) 373-7537
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#### Gentlemen:

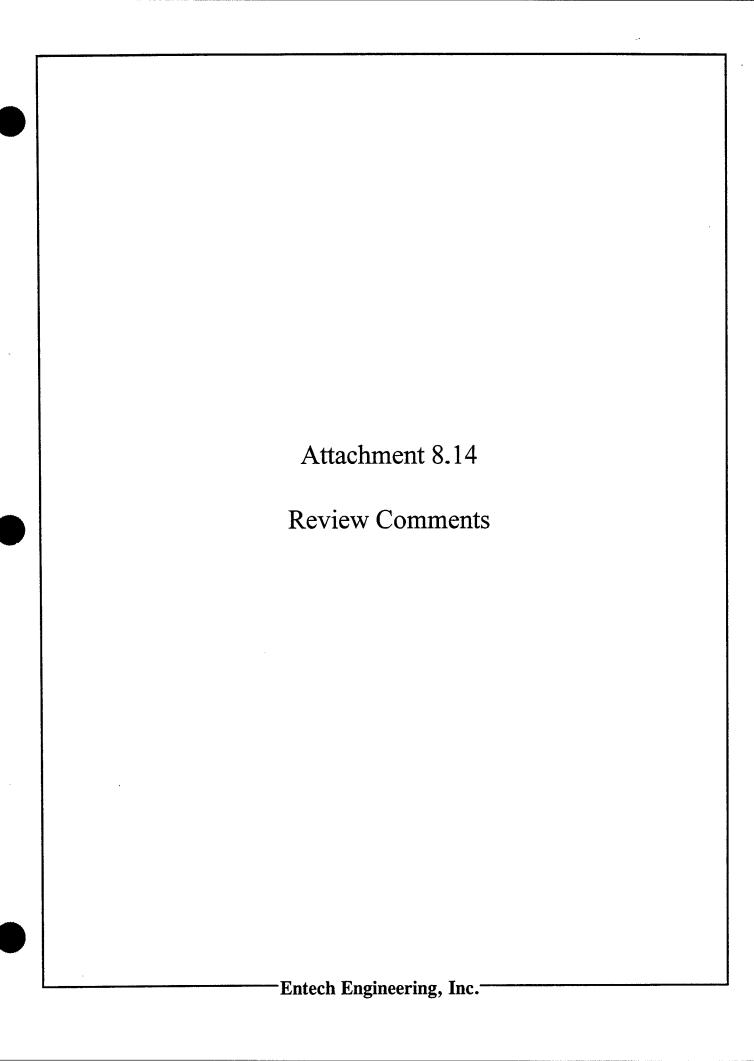
The delivery order for the Limited Energy Study, Myer Center Steam System, Fort Monmouth, NJ, was signed today. A copy of the signed order, Form 1155, is attached. The complete package will follow by mail.

17.5

Now the real work starts. Best wishes for a high-quality, energysaving, on-schedule study! Don't forget to send us copies of each submittal.

Good luck,

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# **INTERIM REVIEW COMMENTS**

## **EEAP LIMITED ENERGY STUDY**

at

MYER CENTER
Ft. Monmouth, New Jersey

prepared by

ENTECH ENGINEERING, INC.
4 South Fourth Street
Reading, Pennsylvania 19603
610-373-6667
Entech #4130.05

May 17, 1996

#### **Interim Review Comments and Responses**

The following addresses the review comments (CESAM-EN-DM Comments - Battaglia) for the EEAP Limited Energy tudy, Myer Center Steam & HVAC at Fort Monmouth, NJ along with our responses.

	Comment		Response
1.	General: The AE has done a very good job of collecting and presenting data on the mechanical system for this complicated building.	1.	General: Thank you for your positive comment.  We appreciate the time and effort put forth in reviewing the report.
2.	Page 2-5: Correct description for kWh.	2.	Page 2-5: Description in abbreviations table for kWh was corrected from kilowatts per hour to kilowatt hour.
3.	Page 2-20, Par 2: Twenty years was entered as common criteria for economic life in the LCCAs. This value can vary depending on the type of system being analyzed. For a complete list of economic lives, see the ECIP Guidance.	3.	Page 2-20, Par 2: We are aware of the list for economic life in LCCAs. We will incorporate appropriately in individual LCCA's.
4.	Page 3-9: Correct typos in first and second paragraphs.	4.	Page 3-9: A couple of typographical errors were corrected in paragraphs 1 and 2.
5.	Page 3-7 & 3-9: With regard to the new hot water boilers for Building 2706; Please clarify if the base case energy usage and the analyses of the ECOs will assume new boilers in operation or not in operation.	5.	Page 3-7 & 3-9: Replacing steam heating with new hot water boilers in the middle of an EEAP study complicates the analysis of the past versus the future. With this study, the existing loads on the MCA water will be separated in the boiler plant related ECO analysis. The new boilers in Building 2706 will be assumed to be in operation supporting the MCA demands. The main ECO for this EEAP Study will focus on the viability of operating a large boiler plant and steam distribution with relatively small loads excluding the MCA demands. The losses and/or overheating of spaces is suspected to be excessive, thereby warranting the investigation of decentralizing this system. Also, decentralization can be accomplished such that the full-time operation and monitoring of the existing system can be reduced to part-time monitoring with the new installations.
6.	Page 3-12, Par 2: Delete unnecessary word after "water chiller".	6.	Page 3-12, Par 2: The unnecessary word was removed.

	Comment	Response
7.	Page 3-16, Table 3.4.1.1: Some of the items listed, for example, 9-11, have both cooling equipment compressor data and chilled water data listed. It can't be both. Please clarify.	7. Page 3-16, Table 3.4.1.1: When this list was originally comprised the compressor (hp) and (kW/ton) were omitted for the MCA chilled water loads which are handled by the Central Chiller Plant in Building 2706. Later, portioned values were then added for purposes of identifying the building/floor load totals and kW/ton averages. The MCA values in the "Est. Cooling Load/Compressor" columns shown were darkened to differentiate them from the others. Note: The connected (kW) loads in the electric model (Table 5.6.2.2) reflect that the values in the compressor columns of the listed MCA items in Table 3.4.1.1 and 2 were removed. Horsepower (hp) in the "Cooling Type (Est. Cond. Flow/hp)" columns relate only to the associated pumps and condenser fans excluding the MCA compressor loads.
8.	Page 3-16, Table 3.4.1.1: Cooling Equipment Field: Several items list plant chilled water at 55°F. Chilled water is usually supplied at 42-45°F. Should this apply to supply air temperature rather than chilled water temperature?	8. Page 3-16, Table 3.4.1.1: The 55 degree chilled water reference for the MCA two-pipe system is correct. The building maintains this temperature because they want to minimize condensation from the fan coil units. Since the perimeter fan coils and the MCA air handlers serving other areas are on the same piping system the supply temperature will remain in the 50-55°F range. Areas requiring lower humidity control, or more cooling in general have been supplemented with other cooling sources (ie: Item 118 in Table 5.4.1.2 and some "Liebert Units" in other areas). Comfort is probably borderline on design days using the 55 degree water.
9.	Page 3-18: Suggest the following additions to the tables on page 3-18: a. Table 3.1.4.3: add columns for Supply & Return Temperature. b. Table 3.1.4.4: add column for equipment served.	9. Page 3-18: a. Columns were added for the supply (55°F) and return (65°F) for the Building 2706 chillers in Table 3.4.1.3. b. The "Building Service" column in Table 3.4.1.4 was changed to "Equipment Served". CT-1 in Building 2706 supports the chiller plant only while the towers on the roof of Building 2700 support a variety of equipment.
10.	Page 3-25: Top line: Should the word "coils" be substituted for "unit heater"?	10. Page 3-25: The phrase "unit heaters" was replaced with "coils".

	Comment		Response
11.	Page 4-8: Regarding unavailability of fuel oil bills for months of June and November: Is it possible that they just did not order oil in June and November because they had enough in the tank for expected needs? Discuss in light of findings on pages 4-16 and 4-17.	11.	Page 4-8: The June and November oil bills were considered missing because no other information was available to consider otherwise. Records available to us did not confirm whether they existed or not. If the two months in question are considered to be months when oil was not ordered, then the estimated usage would be about 30% greater than the delivered totals. Fort Monmouth should be able to confirm whether fuel oil was ordered/delivered for June and November of 1994. We believe the report should remain as is unless further information is provided to the contrary.
12.	Page 4-14 & 4-15: Here two year's worth of steam production data are shown, with more steam produced in 93-94 then in 94-95; then they are averaged. Averaging is not always the best way to determine the typical year's performance. After all, that is the objective, to predict the typical year's performance. Wouldn't it be better to compare the steam production to the EZDOE output, which is based on a typical year's weather, and make adjustments on that basis? Please discuss.	12.	Page 4-14 & 4-15: Entech believes that the two year information for steam production is the best available source for identifying past steam production. The EZDOE output is a check of the heating and cooling loads for Building 2700 only. Cafeteria usage, domestic hot water, Buildings 2704, 2705 and 2715 usage and the system losses, which vary from month to month according to our findings, are beyond the EZDOE focus for this report.
13.	Page 4-16, par 4-6: Good work.	13.	Page 4-16: Thank you for your comment. This section has since been incorporated into Section 4-3.
14.	Page 5-3: Top of page, mentions heating for areas frequently open to outdoors. Suggest evaluating an ECO to serve such areas with direct-fired gas IR heaters.	14.	Page 5-3: While the use of direct fired gas IR heaters is an excellent idea, Fort Monmouth personnel have concluded that serving these areas with hot water during the heating season only will be acceptable.
15.	Page 5-3, Par 2, Sent 2: Change "supported a majority" to "supported by the majority".	15.	Page 5-3, Par 2: Paragraph corrected per comments.

	Comment		Response
16.	Sec 5, General: I am concerned about the use of multiple models to determine building loads and predict system performance. Except for the development of the U values and the analysis of the smaller buildings, the use of the Degree Day Method seems to have done more to muddy the waters than to verify the loads and performances. Some of the following comments will illustrate these concerns. It is suggested that the time spent on the Degree Day Method for Building 2700 might have been more profitably spend on refining the inputs for the EZDOE model	16.	Sec 5, General: We agree that the Degree Day Method has limitations for modeling of loads as compared to EZDOE. The Degree Day Method spreadsheet is a standard format which we have developed from previous work to help verify the validity of other calculations. It does not have the ability to account for internal heat generation loads which offset some building heat loss. It does, however, give us a way to compare the EZDOE results on a gross basis. All ECO evaluations will be based on the Steam Use Model, EZDOE and Electric Model. We have made modifications to the EZDOE simulations to improve the accuracy of the model since the issuance of the Interim Report.
17.	Page 5-7: Regarding reheat for the clean rooms: The reheat load is taken from Table 3.4.1.2, presumably from the column labeled "Estimated Heating load, Reheat". How was this load estimated; was it based on construction drawings, or nameplate data? Par 5.2.2 goes on to assume that a certain percent of this load is required year round. I am concerned that an assumption on top of an estimate may result in too much error. Wouldn't it be just as easy and more accurate to model each clean room?	17.	Further review of these units suggests that the air supply is about 50,000 cfm and the outdoor air quantity is about 20% or 10,000 cfm. Initial calculations were in error. Psychometric calculations will be included in the Appendix for ECO support data. Detailing each cleanroom would require a thorough design review of information that was not provided to us. We believe our evaluation is a good approximation of the conditions for these spaces. Also, as mentioned EZDOE was not set up in this study for detailed analyses of individual spaces. Block loading of the cleanrooms was consistent with the other system/area evaluations.
18.	Page 5-10, Par 5.2.4, Sent 1; Change "food" to "for".	18.	Page 5-10: Paragraph corrected per comment.
19.	Page 5-13, Par 5.2.6, Sent 1: Change "from" to "by".	19.	Page 5-13: Paragraph corrected per comment.
20.	Page 5-17: I tried to determine the peak winter day steam demand based on the quantities presented in Section 5.2, and I came up with approximately 10,400 lb/hr. This is considerably less than the 15,000 pph mentioned on page 5-14 or the 17,000 pph mentioned on page 5-20. That leads me to suggest that the methods used in Sec 5.2 result in underestimating the requirements.	20.	Page 5-17: The rate of 10,400 lb/hr in Section 5.2 pertains to the connected heating loads for Building 2700 and 2706, whereas the 15,000 lb/hr reference for pipe velocities relates to the plant's steam production peak which includes additional loads for the cafeteria and Building 2704, 2705, and 2718, and of course the system losses. The corrected 16,000 lb/hr reference on page 5-20 pertains to the record peak of the winter of 1994. Both of these values were determined by reviewing the boiler logs in Appendices.(Refer to response to Comment 22.)

	Comment		Response
21.	Page 5-20, Sent 2 below Table 5.3.2: Change "to" to "than".	21.	Page 5-20: Paragraph corrected per comment.
22.	Page 5-20: States that the peak steam demand in January 1994 was over 17,000 pph. Where is that data shown in this report? It is not reported in Table 4.5.1, Facilities Engineering Operating Log, nor in Table 4.5.2, Adjusted Steam Production.	22.	Page 5-20: It is apparent that some boiler logs were inadvertently mixed in with the fuel oil bills. The logs show that the hourly average "peak" for fuel use at 80% efficiency for both January 19 and 20, 1994 was close to 16,000 lb/hr. The values tabulated in Section 4 and modeled in Section 5.2 are average monthly figures. Actual hourly peaks are considered to be higher.
23.	Page 5-24 & 5-29: Color-coded floor plans are excellent.	23.	Page 5-24 & 5-29: Thank you for your comment.
24.	Page 5-30: Cooling Coil Temp shown as 55°F: Looks like this may refer to Leaving Air Temp rather than cooling medium temp. Please clarify. See Comment 8 above.	24.	Page 5-30: The information in question was changed to reflect that the Leaving Air Temperatures for the MCA system and the DX/Misc Cooling systems is 60°F and 55°F respectively.
25.	Page 5-32: Statement at top regarding occupancies: It would not seem too difficult to set up an occupancy schedule for the cafeteria. Data on the cafeteria was reported on Page 3-2.	25.	Page 32: Other than the general classification for the "cleanroom" spaces, the floors were subdivided in EZDOE by generalized system. This block loading method works well for estimating overall monthly or quarterly usage and peak totals. As with the case of the cafeteria and the auditorium the local system peaks are probably underestimated, but for the purposes of the analyses in this report, that detail was not considered important enough to differentiate in the block loads setup.
26.	Page 5-32: The note under Ventilation Rates stated that many areas do not received outdoor air. If people are working in these areas, their health demands that they receive ventilation, even if the cooling load is increased. The report should at the very least make a recommendation for introduction of outside air to meet the requirements of ASHRAE 62-1989.	26.	Page 5-32: As professional engineers, we would have been remiss to not mention the issue of minimum air (or lack of) conditions. Our intent was to comment on that subject in the comments and recommendations portion of Section 7. The introduction of additional outside air to the building will obviously do nothing to save energy. A paragraph was added to page 3-9 that also points out the fact that outside air is missing in many areas.

	Comment		Response
27.	Page 5-32: Regarding infiltration: Please provide more background or give more explanation for the first statement regarding infiltration rates set for summer and winter.	27.	Page 5-32: The baseline infiltration rates were modified in EZDOE to 0.8 ach year round since the building is continuously exhausted. The 0.8 ach rate, suggests an ASHRAE definition for a loose to medium type construction for this building during winter conditions. Summer conditions at this rate are considered high but for this building the exhaust differential governs year round. This section will be modified to clarify this setting.
28.	Page 5-33: The very first sentence on this page could also use some additional background or explanation.	28.	Page 5-33: The following sentences were added to the infiltration portion of Section 5.4.3. "Many of the exhaust fans on the roof are designed with relatively low static pressure of 1"± water gauge". The negative conditions existing in the building would suggest that the added static pressure would reduce the capacities of these fans and in some cases the fans probably exhaust very little air.
29.	Page 5-33, Sent 2: Change "roof" to "rate".	29.	Page 5-33: Paragraph corrected per comment.
30.	Page 5-37, Table 5.4.4.1: Should include "Base Case" in the title.	30.	Page 5-37, Table 5.4.4.1: Corrected per comment.
31.	Page 5-48 & General: The word "usage" is creating some confusion. In some places usage figures are given units of kWh, and in other places units of kW. Please be consistent.	31.	Page 5-48: Usage should be kWh, Page 5-48 was corrected to reflect that consistency. The remainder of the report will be reviewed for consistency.
32.	Page 6-2, ECO list 1.a. Heating: Mentions "hot water heating system/season". Was this intentional, or is it a typo? Please clarify.	32.	Page 6-2: System/season is intentional with the way we are preliminarily presenting the ECO scope. Converting areas utilizing steam available year round to hot water available for a 7 month season maybe unacceptable to some. The use of system/season hopefully highlighted that aspect.
33.	Page 6-4, Sec 6.3: Normally all ECOs are supposed to be analyzed by the time the interim report is submitted. Apparently, a different arrangement has been mutually agreed upon by the Norfolk District, For Monmouth, and the AE for this study. Please assure that sufficient time is provided for review and comment on ECO analyses prior to development of project documentation and submission of the final report.	33.	Page 6-4: Our intent is to allow for necessary time for review of the ECOs.

	Comment		Response
34.	Page 6-5: In the Proposal: Change "380 kW/ton" to "380 kW".	34.	Page 6-5: Paragraph corrected per comments.
35.	Page 6-6 and General: What bases is used for estimating the construction costs, Means, a quote, a combination? Please include the estimate with backup data where appropriate for each ECO analysis.	35.	The cost estimates are for the most part based on Means. The estimate for this ECO was inadvertently left out of this submission.

#### **Interim Review Comments and Responses**

The following addresses the review comments (SEL-FM-PW-E Comments - Zatorski) for the EEAP Limited Energy Study, Iyer Center Steam & HVAC at Fort Monmouth, NJ along with our responses.

	Comment		Response
1. Sec 6.2 1a) Buildings 2 as per recommo	705 & 2704 should be converted endation.	1.	Sec 6.2 1a) Agreed
11	700 cleanrooms may go out of 't know at this time, Building commendation.		1b) Entech shall proceed with the assumption that the cleanrooms will continue to operate as is. Consideration for what might happen in the future is difficult to incorporate into an ECO analysis. Note: If the building steam is removed then a heat source of one type or another will still be required for these parts of the building.
discussions wit will cost appro	700 Kitchen equipment. Per h Mr. C. Stone, MWR Mgr. It ximately 18K to replace the dish washer and steam tables.		1c) Thank you for the input on the kitchen equipment. Further discussion with Mr. C. Stone clarified that the \$18,000 is for both the kitchen equipment and installation costs, and that these appliances will utilize hot water fired locally by natural gas. Miscellaneous costs will be added in the ECO analysis to assure an adequate estimate for this work.
,	700 domestic hot water should be as fired equipment utilizing the ution system.		1d) Agreed
a) Project in pr	rogress in Building 2706.		a) The extra boiler mentioned in our submittal related to a unit that would be deemed necessary (by Fort Monmouth personnel) for supplying year round heat and/or reheat for areas outside the scope of the new cleanroom boiler for the base case. We are aware of the project in Building 2706 which supports the MCA system. Further discussion with Fort Monmouth personnel has confirmed that only the cleanroom heating/reheat load will be required during the summer in Building 2700.
•	how much of an impact will be leaves, hold on this.		b) Refer to comment 1b. The use of hot water versus steam for the cleanroom boiler is a variation from the base case for an ECO comparison only.

	Comment		Response
	c ) Not feasible or cost effective. Entirely to much piping construction required to achieve this.		c) We appreciate your insight. The ECO evaluation should confirm your thoughts.
	d) Would be governed by cost effectiveness between the operation of electric and gas fired equipment. Costs of the actual equipment are probably the same.		d) The ECO analyses will determine the best method for providing domestic hot water.
2.	Sec 6: Don't agree, approximately 50 units will be required and will be maintenance intensive.	2.	Sec 6: We appreciate your input on what might be required. The ECO evaluation should confirm your thoughts.
3.	Sec 6: If you include FCUs you're talking about 1400 units.	3.	Sec 6: Our intention was to address air handing units that are not dictated by space exhaust (outside air) quantities (ie: cleanrooms, etc.) Fan coil units (FCU's) will not use clocks.
4.	Sec 6: Will need some kind of study on this.	4.	Sec 6: Resolving the exhaust/infiltration problems associated with this building would take an extra study or evaluation beyond the scope of this project to properly discern how changes could be made. Our intent will be to demonstrate ECO findings associated with a reasonable scenario for this building.
5.	Sec 6: Not cost effective per page 6-7 of this text.	5.	Sec 6: Agreed
6.	Sec 6: Not versed to comment.	6.	Sec 6: No response required.
7.	Sec 6: Not versed to comment.	7.	Sec 6: No response required.
8.	Sec 6: Will issue IJO for rehab of tower #5.	8.	Sec 6: Our intent is to look at changes to the cooling tower (CT-1) for the chiller plant.
9 12	2. Sec 6: Not versed to comment.	912.	Sec 6: No response required.

#### **Interim Review Comments and Responses**

The following addresses the review comments (Comments - Konig) for the EEAP Limited Energy Study, Myer Center team & HVAC at Fort Monmouth, NJ along with our responses.

Comment			Response		
1.	Entech did an excellent job of describing the existing conditions of the Myer Center and it's existing mechanical system.	1.	Thank you for your comment.		
2.	Of the 12 ECOs on Entech's list only ECO #5 was evaluated.	2.	Out intent was to supply an example (ECO #5) for review, and to list the ECOs to be evaluated.		
3.	Entech must evaluate the other 11 ECOs.	3.	Our intent is to evaluate all 12 ECOs.		
4.	Page 3-1, Typos, Eatontown not Eatonville.	4.	Page 3-1: Corrected.		

# RESPONSES TO PRE-FINAL REVIEW COMMENTS

#### EEAP LIMITED ENERGY STUDY

at

MYER CENTER
Ft. Monmouth, New Jersey

prepared by

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Entech #4130.05

February 1997

#### **Pre-final Review Comments and Responses**

The following addresses the review comments (DPW - K. Dooney - Mech/General) for the EEAP Limited Energy Study, Myer Center Steam & HVAC at Fort Monmouth, NJ along with our responses.

	Comment		Response
1.	Pg 1-3, Table 1.4.1; Real Property records for building 2705 indicate that building is 47,592 sf.		he square footage for Building 2705 was revised 47,592.
2.	Pg 1-5, para 1.7; 2nd para of 1.7 states identification of opportunities with building 2700 HVAC system was limited. The subsequent sentence provides 2 reasons, however, it is not clear how these reasons especially "the large number of miscellaneous systems" limited Entech's ability on identifying cost effective opportunities. Please explain.	cl K lee sta sa H lise re Ac tel No W pr op the att	the scope of this limited energy study project was arified in a letter from E. Caulkins of Entech to a Dooney, Ft. Monmouth dated 9/27/95. The atter addresses the change in scope beyond the eam system study to include possible energy avings opportunities with the remaining major VAC systems in Building 2700. A preliminary st of ECOs was presented in that letter that exame the basis for the final group of ECOs eviewed. In the distribution of ECOs eviewed. In the conversation between J. Kendall, sorfolk District and E. Caulkins at Entech. The believe our report addresses the most exactical list of potential energy savings exportunities for Building 2700. The reason for the limited opportunities for this building can be tributed to the types of installations in this milding.  The only opportunities that may exist beyond the st provided would come from areas supported by mall dedicated systems that may or may not be
		ind fo eq Th mi pid EC of	efficient. Even at that, changes in efficiencies or small systems do not generally pay for new quipment from an energy savings standpoint. The reference to the "large number of iscellaneous equipment" relates to the remaining eces of cooling equipment not addressed by the COs. These individual systems may be in need requipment changes but the scope of this limited addy does not include those evaluations.
3.	Pg 1-6, Table 1.7.1; What is the abbreviation "LCCID" mean?	3. Se for De	ection 2.6.6. was updated to add the description r the acronym LCCID (Life Cycle Cost In esign). A note was added below Table 1.7.2 to fer to Section 2.6.6 for an explanation of the CCID program.

## **Pre-final Review Comments and Responses**

	Comment		Response
4.	Pg 1-7, top pg; The sentence at top of page, "addresses" should be "addressed".	4.	"Addresses" was changed to "addressed".
5.	Pg 1-7; Is this the recommended "implementation plan"? the words "In order to go further" are not descriptive enough.	5.	Page 1-7 was re-written to help clarify our intent.
6.	Pg 1-7, para B; What is meant by a "strategic up front survey" and why wasn't this included in this study? It is one of the recommended ECOs.	6.	Refer to the response for comment 2, and the changes created by comment 5 of page 1-7. Also refer to the response for comment 19.
7.	Pg 2-8; The examples indicate inside temp of 65°F while the table indicates 72°F. The inside temp of 72°F is more realistic. Recommend degrees on pg 2-8 be changed.	7.	The temperature in the sample calculation on Page 2-8 was changed to 72°F. Also, the U-value was corrected in the calculation to 0.55. The values determined for the Heat Loss and Cost in the sample calculation are correct.
8.	Pg 2-9, Table 2.5.3.1; Roof "U" value of 0.11 does not seem correct. We design to U=0.03 now and over the past 20 yrs. the roof "U" value constructed for at least U=0.05	8.	The U-value that we used was based on standard installation per ASHRAE Handbook 1977 Fundamentals. Nothing we saw from an installation standpoint or the drawings available to us suggested that the roof was of construction constituting U-values of 0.05 or better. In any event, changing the value would not have any significant effect on the ECO results.
9.	Pg 2-10, para 2.5.4, 6th sent; Explain what is meant by this sentence - "Year round cooling and heating loads will be estimated based on building's usage".	9.	This statement generalizes the approach of evaluating chunks of building space by the apparent utilization of the space(s), by the equipment supporting the area and by the relative location within the building. Refer to Section 5.4 beginning on Page 5-22 for more explanation on this approach.
10.	Pg 2-14, winter and summer schedule; This does not agree with winter months at left bottom of Table 2.5.5.1.	10.	The approach to the electric model for this project was to review the loads on a 3-season (4-month/season) basis for establishing demand and usage while the actual rates are bi-seasonal based. Summary calculations evaluate the cost associated with the totals for the summer (4-months) and non-summer periods (8-months). The reference to winter months in the lower left hand corner of the sample, Table 2.5.5.1 refers to the non-summer months.

	Comment		Response
11.	Pg 2-16, Table 2.5.5.1; Demand charge are \$9.22 from June - Sept. How does this jive with info at left bottom of Table 2.5.5.1. Why is historical data absent?	11.	The values at the lower left of Table 2.5.5.1 are different from the values determined later for Fort Monmouth because this table is a sample only. Also, no historical data is shown because it is a sample only.
12.	Pg 2-21, para 2; deviation of \$21.23 per mmBtu requires a "\$" sign in numerator	12.	Page 2-21 was corrected to add "\$" in numerator.
13.	Pg 2-25, para 2.7; There has never been a meeting scheduled with DPW to discuss report findings. Perhaps when these comments are received an "on-board review" at DPW can be scheduled.	13.	As previously agreed upon, we would be available for a meeting once the review comments were made and addressed.
14.	Pg 3-5, Table 3.3.2; The roof resistance value / "U" value does not appear correct. Roof replacement was completed.	14.	Refer to comment item #8.
15.	Pg 2-23, Table 2.6.6.1; Can this table be made to appear clearer than it is? How does this table fit into what we are doing? Purpose?	15.	No. This table is an exact copy of what was received with the program. The table is a guideline of how one would go through the LCCID program commands/functions. It was provided as a reference to the LCCID approach.
16.	Pg 1-5, 1-6, ECO Summary Table 1.6.1; Why are there no Non-ECIP, O&M projects developed, ie FEMP projects?	16.	We did not identify any projects that fit the non-ECIP, O&M projects definition as stated on Page 7-3.
17.	Pg 3-17, 3-18, Table 3.4.1.1 & 3.4.1.2; What does "Est" mean in the column headings?	17.	The term "Est" means that every piece of information listed in the table was not identified from a drawing schedule, maintenance list, equipment tags, etc. Information was added and values calculated (estimated) where necessary to complete the table. We filled in these remaining columns with values based on the information available and/or good engineering judgement. (i.e. estimated in some cases).
18.	Table 3.4.1.1 & 3.4.1.2; The point size is too small - recommend/request table be reprinted with point size of Table 3.4.1.6.	18.	C-size drawings of the two tables in question are attached for your use. The 11x17 tables in the report were left as is.

_	Comment		Response
	Pg 3-14, Bldg 2700 exhaust and 5-33/34; The deficiency that exists would suggest to me that a possible Non-ECIP O&M project could be developed to remedy this deficiency.	19.	Yes, we recognize that the building as presently setup has significant deficiencies associated with a lack of outside air, and potentially excess exhaust. A project to add air where needed and to reduce air where not required by eliminating exhaust would go along way toward improving the air quality in the building. Such a project however, would not reduce overall energy costs. The costs would increase with the added outdoor air quantities. This study focused on energy savings opportunities and not building deficiencies. The project presented later as ECO-3 was a hypothetical situation based only on the reduction of unnecessary exhaust.
20.	Pg 3-15, 4th line from top; Cross reference specific page #'s where the discussion of exhaust, ventilation rates, infiltration occur in Section 5.	20.	Page 3-15 was revised to add reference details to "Section 5".
21.	Pg 3-25, 6th line from top; Bldg 2705 is not 30,000 sf. Our records indicate 47,592 sf.	21.	The square footage in this sentence was revised to match the exact total provided.
<b>3</b> .	Pg 3-27, 4th line; Why did Entech "assume" two pumps installed? In the note that follows the "pumps had failed? this cannot be an assumption.	22.	Page 3-27, Section 3.6 was rewritten to eliminate the assumption that "two domestic hot water pumps were installed".
23.	Pg 3-27, para 3.7, 6th line; Which feature (or both) is not being used.	23.	The sentence in question was clarified on page 3-27 addressing the use or non-use of time clocks.
24.	Pg 3-31, para 3.10, 9th line; Natural gas usage in lab areas should be more certain not "possibly" either by site inspection or interview with lab technicians this could be made certain.	24.	Since the available records suggested extremely low levels of gas usage, it was not considered important to identify all the minor users including labs. Only the expected gas usage associated with boilers was evaluated with the models and the ECOs.
25.	Pg 4-1, para 4.1 4th line, Pg 4-10, para 4.4; Natural gas billings were available for Bldg 2700 - if these were not being furnished Entech should have announced in stronger terms these were not provided. I recall hearing no objection by Entech personnel other than billings were required. Natural gas billings can be provided.	25.	We visited the Ft. Monmouth "energy" group on three different occasions to assist in the search for billing information associated with Building 2700. Several phone calls and faxes of request were made in an attempt to get more information. What is shown is what was either found and/or provided. Since the past use of gas was negligible relative to the projected future totals, the information provided was of little use anyway. New billing beyond (later than) the time period evaluated are not requested.

	Comment		Response
26.	Pg 4-1, 4.1, 14th line; Specify where in Section 5 these "details" may be found.	26.	The line in question was modified to include the Section 5.6.3.1 reference.
27.	Pg 4-7, para 4.2.3, Entech should contact the utility and verify what the interval is.	27.	The interval as specified in ACP&L Rate Schedule Sheet No. 22, Revision 3, is 15 minutes as stated on Page 4-7.
28.	Pg 4-11, 1st & 2nd line, Pg 4-12 Table 4.4.1; The natural gas data presented is useless.	28.	Data is based on actual gas bills for Building 2700 for the time period of this report. The boilers were still running on oil during this period also. Also refer to response for comment 25.
29.	Pg 4-15, 3rd line; The text should state "how" this adjustment was made and perhaps include an example.	29.	The text Section 4-5, starting on page 4-12, modified to further clarify how the steam production totals were established.
30.	Pg 4-17, para 4.6, 2nd line; Spell "production".	30.	We have added the missing "i".
31.	Pg 4-17, para 4.6, 5th line; Is it accurate to assume the efficiency of oil fired 1940 equipment for the (equal to) efficiency of the 1994 dual fuel oil and natural gas burners? Is natural gas more efficient then fuel oil?	31.	Refer to the changes in Section 4-5 pertaining to comment 29. The changes in that section also address the questions presented here in this comment.
32.	Pg 5-2, para 5.2.1, 4th line from bottom & Pg 5-3; Indicate where are the text the EZDOE results can be found. The various percentages given require some foundation. How were they determined?	32.	The results are summarized on a yearly basis in Section 5.4.4, starting on page 5-39. The percentages or diversity factors used in steam models represent average estimates for the amount of connected load needed during a given time of day and year. We used the EZDOE results as a check for setting these factors along with engineering judgement for trends, balance, etc.

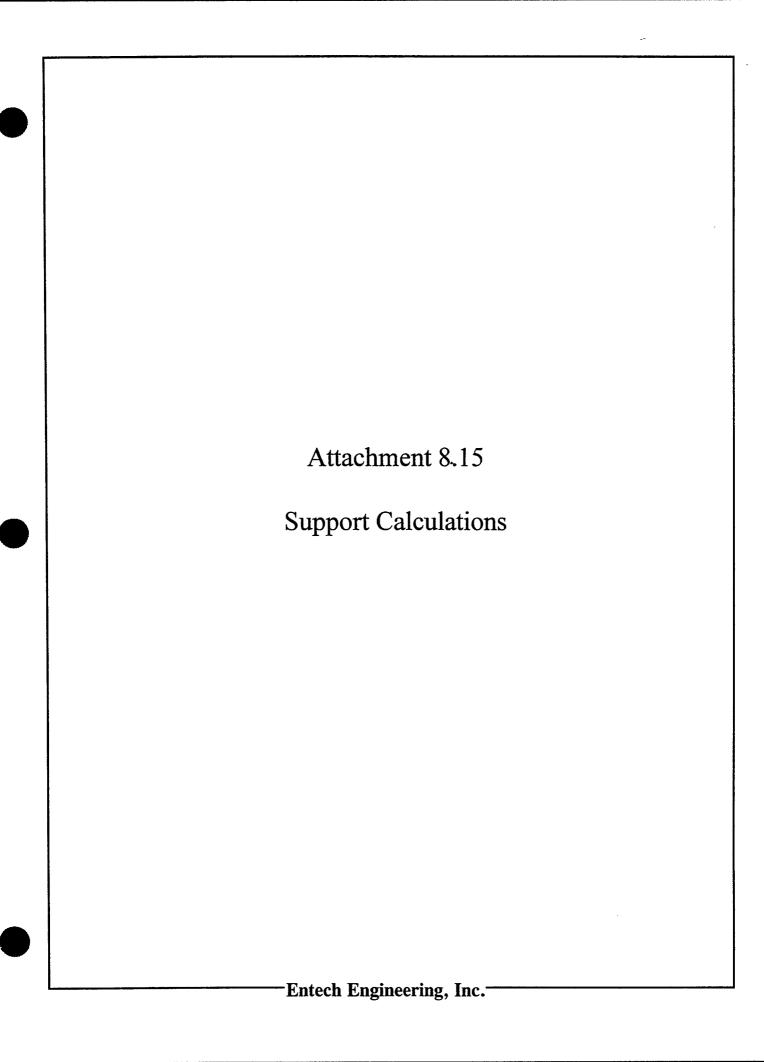
	Comment		Response
33.	Pg5-7, 7th line from top, Table 5.2.2.1 - 5.2.2.3; What is the basis/foundation for the assumption of the percentage? Is this the percentage of the connected load? The text should state "connected load" if it is. Reheat values seem high.	33.	Refer to the response for comment 32. Also we have added changes to Section 5-2 to clarify that the percentages relate to the connected loads as far as the reheat values go, the systems using reheat do so because of dehumidification concerns which inherently creates a constant discharge temperature scenario for these spaces. In the case of Building 2705 the reheat loads for the zones involved are highest at night during the winter because of the outdoor affect of heat loss, and the lack of internal gain in the space at night. This is typical for most systems with exception of cleanrooms which utilize high volumes of air and have internal heat gains on a more consistent basis. Therefore, the rise in space temperature is basically a constant year round and for the most part it is maintained by consistent levels of average reheat.  The actual values may fluctuate some with seasonal affects but with the great amount of air involved its impact is minimal. The values used in the study are adequate for the level of analysis involved.
34.	Pg 5-7, 5-8; The "reheat loads" for the cleanrooms as a constant year round value puzzles me and I don't understand the logic. The reheat values of Bldg 2705 in the summer seem equally illogical. Need your help understanding this.	34.	See response to comment 33.
35.	Pg 5-13, Table 5.2.6.1; The heading % - how were they determined? The same is typical for all categories. Text should explain how to the nearest 1/10% this was calculated (assumed).	35.	The approach is portioning a 100% of the steam produced by rounding the estimated steam model values to the nearest 1/10 of 1%.
36.	Pg 5-13, Table 5.2.6.1; 48.8% steam loss! Is our auditor going to "guffaw" at this value? Are we certain this is fairly reasonable & accurate? Seems unreasonable.	36.	As stated previously, the steam losses projected here may include losses in the boiler. Page 5-13 was modified to add a note about the steam loss numbers. We believe that this system as operating is creating an excessive amount of condensation.
37.	Pg 5-18, Fig 5.2.7.4; Figure shows steam losses at 49.6% is that figure a weighted average of 48.8, 49.8 & 53.5?	37.	Figure 5.2.7.4 is a graph of the average values presented in Table 5.2.7.3.
38.	Pg 5-20, Table 5.3.1; Roof "U" value is not 0.11. A factor of 0.05 is more reasonable.	38.	Refer to the response to comment 8.

	Comment		Response
39.	Pg 5-20, Table 5.3.1; The infiltration rate as compared with Table 2.5.2.1 is different - 0.2 chg/hr vs 0.6 chg/hr. The ventilation ratio appears to be very low!	39.	The 0.6 air changes per hour (chg/hr) value in Table 2.5.2.1 is for a sample calculation only. The 0.2 chg/hr value used later in Figure 5.3.3 represents an average value for the entire area being evaluated in Building 2700. Infiltration occurs where air can move in and out of rooms next to walls, roofs, etc. The large spans of area in the middle core of the building doesn't figure into the air infiltration. But since the heat loss calculation uses the entire building area, we had to make air adjustment to the "chg/hr" for predicting the average per square foot infiltration totals.
40.	Pg 5-22, Fig 5.3.3; Since the bldg's seriously deficient in ventilation does this figure have any validity? Infiltration ratio of 0.2 AC/hr vs. 0.6 AC/hr as low as it is would it constitute 38.4% in heat loss? Does this make sense in light of pg 3-14 connected load exhaust = 180,000 cfm multiplier = 65,000 cfm?	40.	The 0.2 chg/hr value as explained in comment 39 creates a significant overall infiltration which constitutes close to 22% heating totals, see Figure 5.3.3 on page 5-22. Both the ventilation (outdoor) air and the infiltration air are combined to be exhausted out the roof. Refer to the explanation in Section 5.4.3 beginning on page 5-34. ECO-3 was also modified to reference Section 5.4.3.
41.	Pg 4-18, Table 4.6.1; Recommend that this table be compared with the actual NG bills (enclosed)	41.	No gas bills were enclosed. Generated estimated gas consumption was based on the time period with documented fuel oil usage.
42.	Delete Comment	42.	No response required.
43.	Pg 5-26, Fig 5.4.2.2; (a) MR#? = MR 11 & white (I-1to I-2) (b) Stairway#4 should be violet color coded (magenta?) (c) there is a unit heater which heats area behind breezeway entrance and adjacent to loading dock and stairway #5. (d) Substation #5 should be violet.	43.	Corrected and added drawing notes where appropriate-(a), (b) and(d) (c) The blue area in the back represents MCA (III8 - III9) unit heaters. A steam heater exists in dock area from III 9 to III11.
44.	Pg 5-27, Fig 5.4.2.3; (a) the main entrance has steam radiation heat inside col I9 to col I10 (b) the area between col I15 and II5 at the bldg exterior is MCA 2-pipe (light brown) (c) there is a MR for PM JCALS located at bldg center line before col lines IV14 & IV15. Color light tan. (d) MR#? between I17 &I18 = MR13	44.	Corrected, modified and added drawing notes where appropriate for (b), (c) and (d).  (a) From the design drawings and our walk thru it is our understanding that MCA air handlers and cabinet unit heaters serviced this area.

	Comment		Response
<b>4</b> 5.	Comment Deleted	45.	No response required.
46.	Pg 5-28, Fig 5.4.2.4; (a)Center core area between col I6 & I9 is served by equipment in MR21 and is not MCA 2-pipe. (b) Center core between I2 & I4 has a thru wall A/C & Liebert A/C for telephone room.	46.	<ul> <li>(a) According to MCA drawing M-19, this area is supported by MCA system ductwork to/from Mechanical Room 21A above stairwell #1.</li> <li>(b) The loads in this area were generally modeled as steam w/misc DX cooling. The study at this stage will not be updated for this equipment.</li> </ul>
47.	Pg 5-27, Fig 5.4.2.3; (a) Extend light tan one bay south to III12 & III13 (b) MR#? between III9 & III10 is not a MR - delete from dwg.	47.	Corrected (a) and (b).
48.	Pg 5-26, Fig 5.4.2.2; (a) MR#12 should be white unheated space. (b) delete (c) Area between I17 & II4 should be green - cooling only. (d) MR#? between III9 to III10 does not exist delete notation. (e) Area between III10 to III13 should be light tan (not blue)	48.	Corrected (a), (c), (d), and (e).
.9.	Pg 5-28, Fig 5.4.2.4; Between core I6 to I9 should be composite dark tan & green Not MCA 2-pipe!	49.	See response to comment 46 (a).
50.	Pg 5-29, Fig 5.4.2.5; Between Core II20 to III9 should be composite dark tan & green.	50.	Corrected this item.
51.	Pg 5-31, par 5.4.3, "City of ref"; "Long Beach" would be a more appropriate city of ref. than Newark.	51.	Newark NJ is the closest site with available weather data for EZDOE.
52.	Pg 5-34, 2nd line from bottom; Why is the connected O.A. quantity an "estimated" quantity?	52.	Outside air quantities were established from schedule or estimation. Scope of work did not include detailed evaluation of all HVAC equipment including TAB reports.
53.	Pg 5-36, 5-37, Tables 5.4.3.1 & 5.4.3.2; The AC/hr rate is given here as 0.8 for infiltration. See pg 5-20, Table 5.3.1 uses 0.2 AC/hr. In the degree day method, why are different values used?	53.	Higher value of 0.8 AC/hr was used for specific perimeter zones in EZDOE. Degree Day Method used 0.2 as an average for the total floor area combined. See response to comments 39 and 40 also.
54.	Delete comment	54.	No response required.
55.	Pg 5-42, Table 5.5.1.1; The title seams a little mislabeled what is "heating reheat"	55.	Title should be "Heating/Reheat"

	Comment		Response
<b>-</b> 26.	Pg 5-19, 6th line from top; What does "cost estimate" have to do with the heat loss model? Is this a typo?	56.	The sentence in question on page 5-19 was modified to clarify the comment.
57.	Pg 5-42, Table 5.5.1.2, 5th line from bottom; The 1,417 tons peak cooling is not found in Table 5.5.1.2. This value is supported by the operation of only 1 MCA chiller during the summer months.	57.	The figure in this line was modified to read 1,330 which matches Table 5.5.1.2. Yes, the peak day of 640 tons of MCA water is less than the chiller capacity of one chiller, or 690 tons.
58.	Pg 5-50, Table 5.6.3.2, 5.6.3.3; The comparison of the models is not in the report I have or the Tables 5.6.3.2 and 5.6.3.3	58.	The only comparison was made in Table 5.6.3.1. Tables 5.6.3.2 and 5.6.3.3. were not needed, and the reference on page 5-51 was deleted.
59.	Pg 6-2, 2nd line from top; An ECO to provide ventilation to balance the exhaust & infiltration requirements should have been developed FEMP?	59.	Refer to the response for comment 16 and 19.
60.	Pg 6-5, Bldg 2706, Boiler plant (MCA HW) 2nd sent; What is the basis for 15.2 mlbs/day? How does this jive with EZDOE of 3,460 mmBtu/yr (5,500 mmbtu/day)?	60.	The introduction to ECO-1 was modified to reduce confusion by removing the 15.2 mlbs/day reference. Table 5.5.1.1 was modified to read 5,500 mmBtu per year and this value matches the MCA totals from Table 5.4.4.
61.	Pg 6-9, proposed reheat (similarly Pg 6-15, & Pg 6-23); Boiler (HW not steam please) should be located in MR41 and MR42 not MR43.	61.	Pages 6-9, 6-15, and 6-23 were modified to add reference to the alternate choice, ECO-1B, for hot water boilers instead of steam boilers for the cleanroom areas. We selected MR43 because of its larger size and that it was relatively empty of useful equipment. MR41 and 42 are smaller and presently include operating equipment.
62.	Pg 6-21; (a)Please justify or provide basis in "factors" = labor = 55%, material = 10% (b) spell "contingency"	62.	(a) These are the markup values we use for labor and material. Their basis is from the Means Estimating Books, and generally the average impact of the two values is to create 25% markup.  (b) Spelling has been corrected.
63.	Pg 6-22; What % applied to "overhead and profit" to be added to subtotal.	63.	The overhead and profit factors are 10% on materials and 55% on labor. The spreadsheet automatically calculates these values and adds them to the bare cost.
64.	Pg 6-29; Bldg has been replaced, not req'd, no cost. The overall cost is very high.	64.	Building 2704 was part of the scope during the development of the study. The costs included a new building to support new boilers.

	Comment		Response
65.	Pg 6-37, proposed, 2nd section; Aren't these really "preheat coils"?	65.	Reheat coils are normally required for cleanroom temperature and humidity control requirements. Subcooling is required to remove moisture after which reheat is provided to maintain space temperature control.
66.	Pg 6-40; More than 1 HW coil will be required.	66.	The cost estimate states (3) coils at \$5,000 each, implying one coil for each unit. The reality is that this will probably take multiple coils for a given AHU "coil". We believe the cost estimate is appropriate for the installation.
67.	Pg 6-60 & attach 8.13; This is only a tape, bubble gum and string approach. The building lacks ventilation in accordance with ASHARE 62-1989. Isn't the fix proper ventilation & removal of excessive exhaust? Then infiltration will be reduced and fresh air requirements meet. I think we have some other type of project here. Re: page 6 of attachment 8.13.	67.	Refer to responses to comments 16 and 19. As stated, fixing the building air balance problems cannot be paid for by energy savings.
68.	Pg 6-17; The current operation of the MCA HW heating system is one boiler operating in standby. Can this be maintained with this option?	68.	If the changes associated with ECO-1 are made, then it is quite possible that you may have to go to a second boiler during peak periods. This type of operation would equate to a system setup of two boilers operating at 60% capacity during peak periods.



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